# Cassette auto radio 22AC630

00/62/78

PHIL-05192

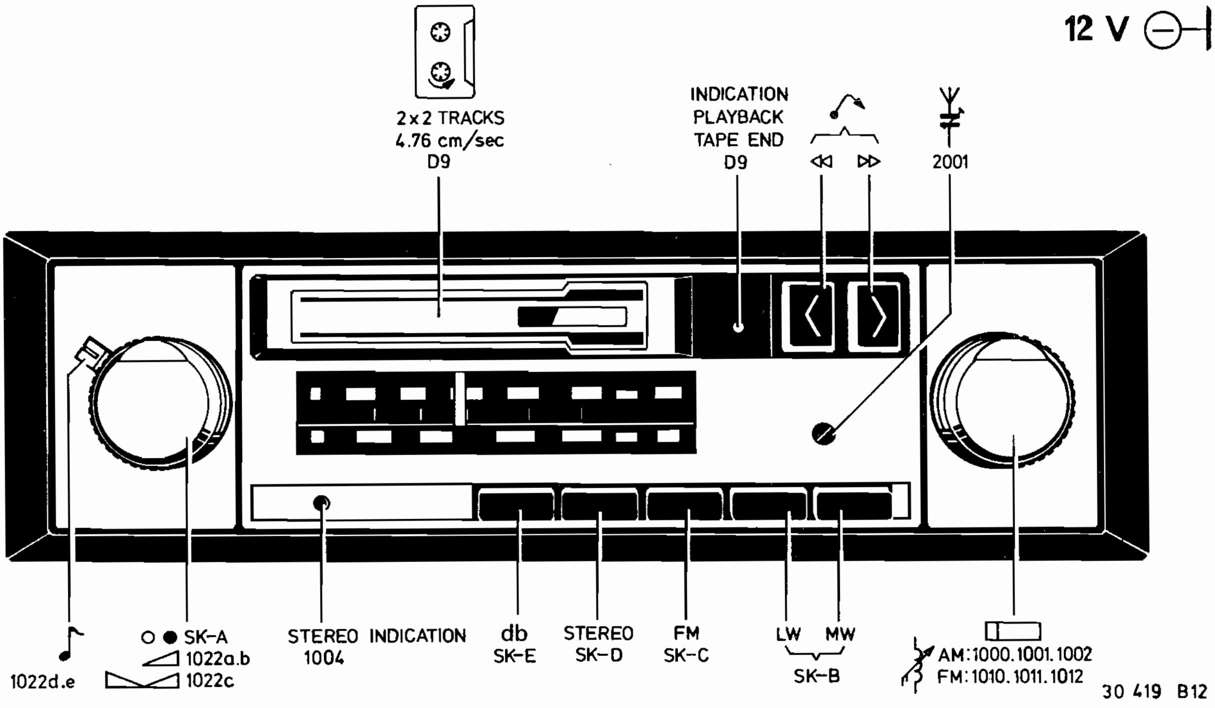
Service
Service
Service

**For repair information of the Cassette deck see Service Manual of Auto cassette deck D9 version D9-2.**

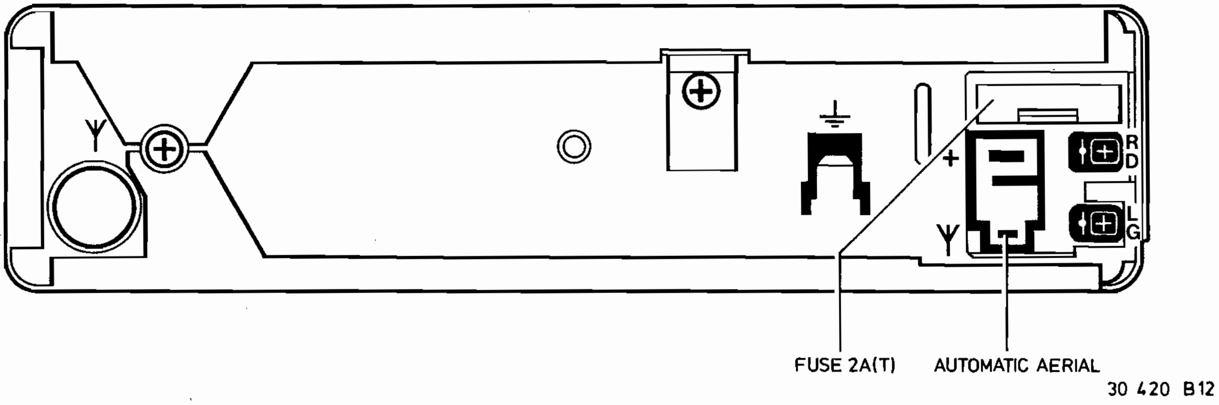
2b41

# Service Manual

12 V



2x2 TRACKS
4.76 cm/sec
D9
INDICATION
PLAYBACK
TAPE END
D9
⏪ ⏩
2001
1022d.e
○ ● SK-A
1022a.b
1022c
STEREO INDICATION
1004
db
SK-E
STEREO
SK-D
FM
SK-C
LW MW
SK-B
AM:1000.1001.1002
FM:1010.1011.1012
30 419 B12



+
R
D
L
G
FUSE 2A(T)
AUTOMATIC AERIAL
30 420 B12

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçio
Subject to modification
GB 4822 725 15145
Printed in The Netherlands
PHILIPS

5192

## TECHNICAL DATA

### General

Power supply voltage : 14.4 V
Dimensions (wxdxh) : 180 x 135 x 44 mm

### Radio

FM : 87.5- 108 MHz
MW : 520-1605 kHz ( 577- 187 m)
LW 150- 285 kHz (2000-1053 m)
IF-FM : 10.7 MHz
IF-AM : 468 kHz
Limiting point α —3 dB : 14-20 μV
10 dB crosstalk : 80 μV
Sensitivity to 26 dB S/N : ≤ 5 μV (FM)
: ≤ 90 μV (MW)
: ≤ 160 μV (LW)

### Cassette player

Number of tracks : 2x 2
Tape speed : 4.76 cm/s
Wow & flutter : ≤ 0.4%
Fast winding time : ≤ 130s (for C60)
Crosstalk : ≥ 24 dB

### Amplifier

Output
— 4 Ω load/14.4 V : 2x 6 W ± 1 dB (D ≤ 10%)
— 2 Ω load/14.4 V : 2x 9 W ± 1 dB (D ≤ 10%)
Tone control : —6 dB at 125 Hz
—8 dB at 4 kHz
db switched on : —6 dB at 8 kHz

## SERVICING HINTS

### A. Dismounting of RF PC-board (Panel 1)

The simplest way to replace components on the RF-circuit board is to take out the circuit board.
To do this, proceed as follows:

- unsolder all of the external soldered connections (to main PC-board and coil housing).
- remove interconnection PCB from the coil housing.
- unscrew aerial bracket 504 from the coil housing.
- the RF PC-board with bracket 504 may now be taken out.

### B. Unquiet reception, insensitivity

In case of complaints about unquiet reception or insensitivity of the set, the following functions should be checked:

a. limiting point α —3 dB
b. SDS (Signal Dependent Stereo)
c. SDR (Signal Dependent Response)
d. IAC - interference pulse sensitivity.

### C. Colour coding of ceramic resonators

The ceramic resonators on the RF PC-board (5210, etc) are provided with a colour dot. This colour dot indicates the tolerance of the resonator.
When replacing a resonator, make sure that it is replaced by a resonator having the same colour dot.
If the proper resonator is not available, all resonators should be replaced by resonators of the same colour code.
For the various frequencies of the resonators, refer to table below:

| Colour | Resonant frequency | |
|---|---|---|
| black | 10,64 MHz | ±0,025 MHz |
| blue | 10,67 MHz | |
| red | 10,7 MHz | |
| orange | 10,73 MHz | |
| white | 10,76 MHz | |

### MOUNTING OF LOUDSPEAKERPLUG

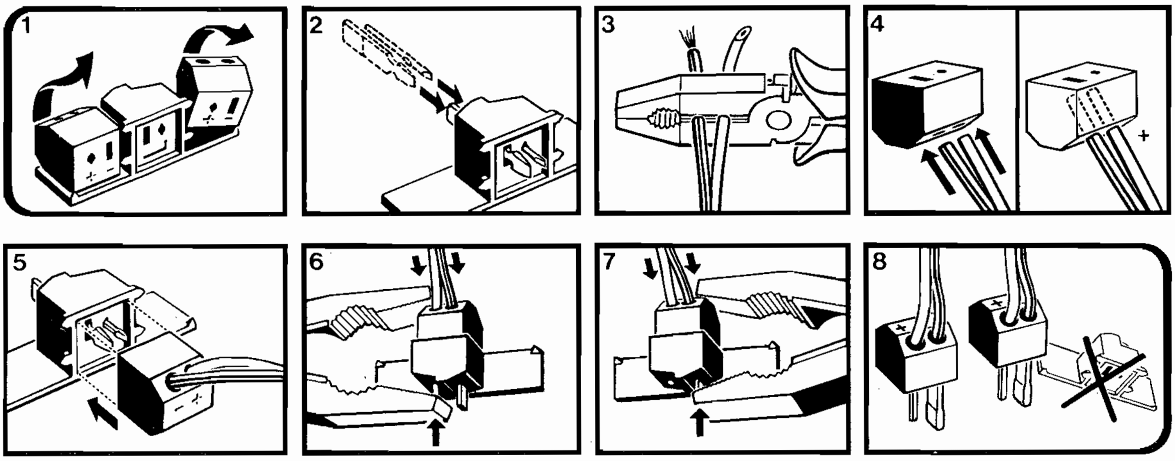
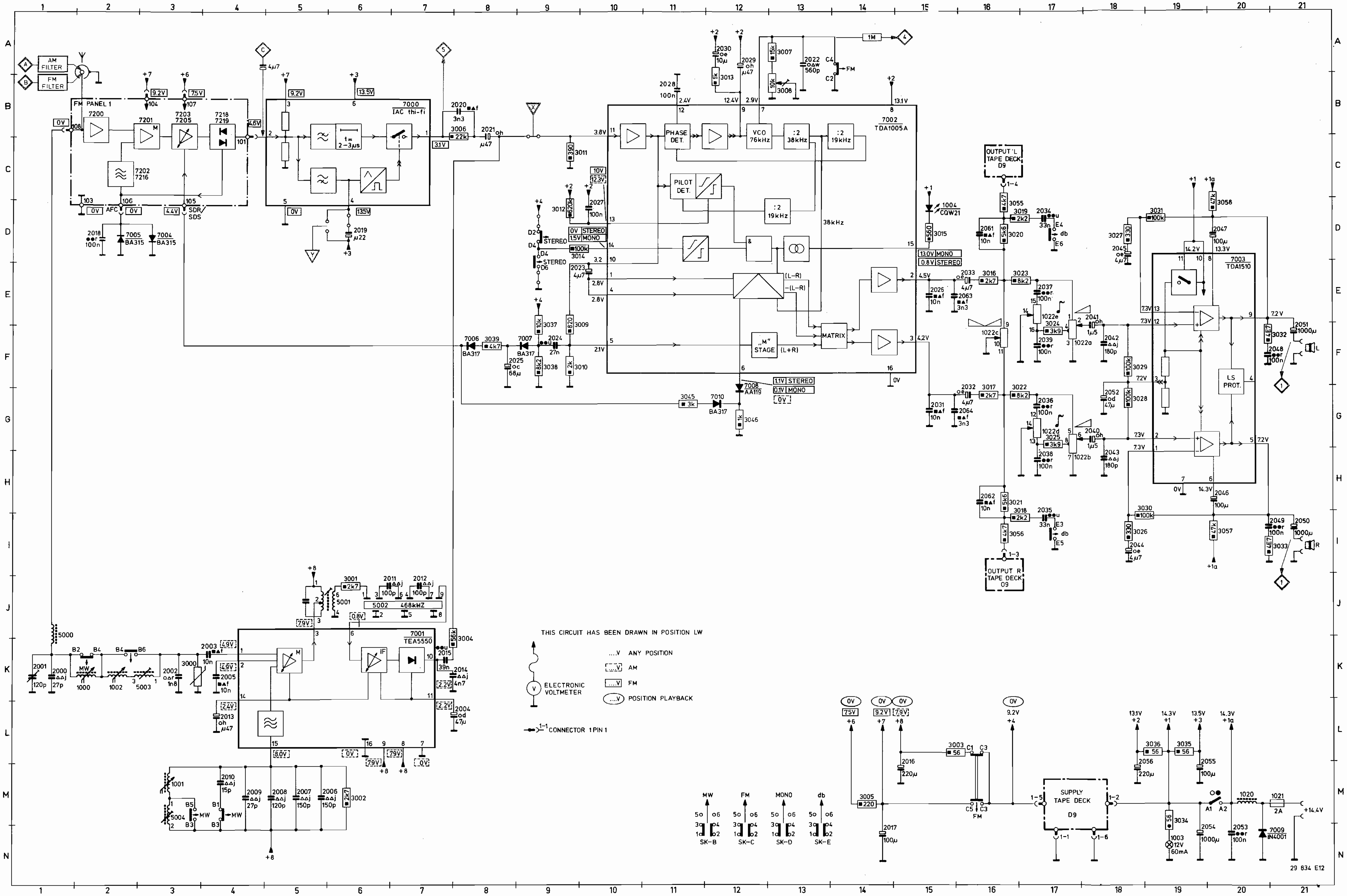


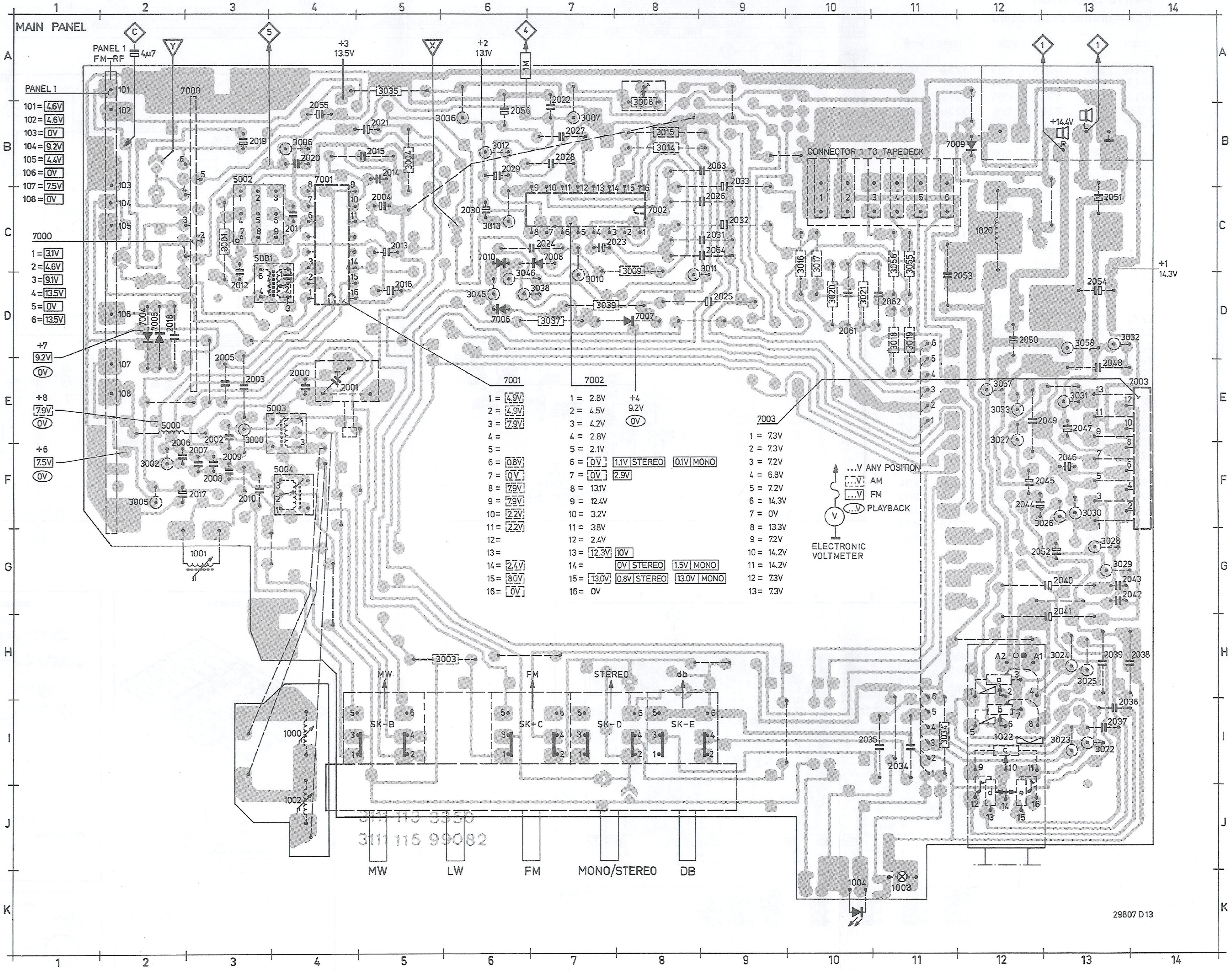
Fig. 1

 
AM FILTER
FM FILTER
FM PANEL 1
7200
7201
7202 7216
7203 7205
7218 7219
7000 IAC thi-fi
7002 TDA1005A
PHASE DET.
VCO 76kHz
:2 38kHz
:2 19kHz
PILOT DET.
:2 19kHz
38kHz
,,M" STAGE (L+R)
MATRIX
(L-R)
-(L-R)
7003 TDA1510
LS PROT.
7001 TEA5550
IF
5002 468kHZ
5001
5000
1001
5004
OUTPUT 'L TAPE DECK D9
OUTPUT R TAPE DECK D9
SUPPLY TAPE DECK D9
1004 CQW21
7005 BA315
7004 BA315
7006 BA317
7007 BA317
7010 BA317
7008 AA119
7009 IN4001
1003 12V 60mA
1020
1021 2A
+14.4V
AFC
SDR/SDS
STEREO
MONO
1.1V STEREO
0.1V MONO
13.0V MONO
0.8V STEREO
THIS CIRCUIT HAS BEEN DRAWN IN POSITION LW
.....V ANY POSITION
.....V AM
.....V FM
.....V POSITION PLAYBACK
ELECTRONIC VOLTMETER
1-1 CONNECTOR 1 PIN 1
MW
FM
MONO
db
SK-B
SK-C
SK-D
SK-E
29 834 E12

## PARTS LOCATION

CD = circuit diagram
PCB = printed circuit board

| ITEM | CD | PCB | ITEM | CD | PCB | ITEM | CD | PCB |
|---|---|---|---|---|---|---|---|---|
| 1000 | K02 | J03 | 2037 | E17 | I13 | 3026 | I18 | F13 |
| 1001 | M03 | G03 | 2038 | H17 | H14 | 3027 | D18 | E12 |
| 1002 | K02 | I03 | 2039 | F17 | H13 | 3028 | G18 | G13 |
| 1003 | N19 | K11 | 2040 | G18 | G13 | 3029 | F18 | G13 |
| 1004 | D15 | K10 | 2041 | E18 | G13 | 3030 | I18 | F13 |
| 1020 | M20 | C12 | 2042 | F18 | G13 | 3031 | D19 | E13 |
| 1021 | M21 |  | 2043 | H18 | G13 | 3032 | F21 | D13 |
| 1022 |  | I12 | 2044 | I18 | F12 | 3033 | I21 | E12 |
| 1022A | F17 |  | 2045 | D18 | F12 | 3034 | M19 | I11 |
| 1022B | H17 |  | 2046 | H20 | F13 | 3035 | L19 | A05 |
| 1022C | F16 |  | 2047 | D20 | E13 | 3036 | L19 | B06 |
| 1022D | G17 |  | 2048 | F21 | E13 | 3037 | E09 | D07 |
| 1022E | E17 |  | 2049 | I21 | E12 | 3038 | F09 | D07 |
| 2000 | K01 | E04 | 2050 | I21 | D12 | 3039 | F08 | D07 |
| 2001 | K01 | E04 | 2051 | F21 | C13 | 3045 | G11 | D06 |
| 2002 | K03 | E03 | 2052 | G18 | G13 | 3046 | G12 | D06 |
| 2003 | K04 | E03 | 2053 | N20 | D12 | 3055 | D16 | C11 |
| 2004 | L08 | C05 | 2054 | N19 | D13 | 3056 | I16 | C11 |
| 2005 | K04 | E03 | 2055 | M19 | B04 | 3057 | I20 | E12 |
| 2006 | M06 | F02 | 2056 | M18 | B06 | 3058 | D20 | D13 |
| 2007 | M05 | F03 | 2061 | D16 | D10 | 5000 | J01 | E02 |
| 2008 | M05 | F03 | 2062 | H16 | D11 | 5001 | J06 | C03 |
| 2009 | M04 | F03 | 2063 | E16 | B09 | 5002 | J06 | A03 |
| 2010 | M04 | F03 | 2064 | G16 | C09 | 5003 | K03 | E04 |
| 2011 | J06 | C04 | 3000 | K03 | E03 | 5004 | M03 | F04 |
| 2012 | J07 | D03 | 3001 | J06 | C03 | 7000 | B07 | A03 |
| 2013 | L04 | C05 | 3002 | M06 | F02 | 7001 | J07 | B04 |
| 2014 | K08 | B05 | 3003 | L15 | H05 | 7002 | B14 | C08 |
| 2015 | K07 | B05 | 3004 | K08 | B05 | 7003 | E20 | E14 |
| 2016 | L15 | D05 | 3005 | M14 | F02 | 7004 | D03 | D02 |
| 2017 | N14 | F03 | 3006 | B08 | B04 | 7005 | D02 | D02 |
| 2018 | D02 | D02 | 3007 | A13 | B07 | 7006 | F08 | D06 |
| 2019 | D06 | A03 | 3008 | B13 | B08 | 7007 | F09 | D08 |
| 2020 | B08 | B04 | 3009 | E09 | D08 | 7008 | G12 | C07 |
| 2021 | B08 | B05 | 3010 | F09 | D07 | 7009 | N21 | B12 |
| 2022 | A13 | B07 | 3011 | C09 | C09 | 7010 | G12 | C06 |
| 2023 | E10 | C07 | 3012 | D09 | B06 | SK-A | M20 | H12 |
| 2024 | F09 | C07 | 3013 | B12 | C06 | SK-B | K02 |  |
| 2025 | F08 | D09 | 3014 | D10 | B08 | SK-B | M03 |  |
| 2026 | E15 | C09 | 3015 | D15 | B08 | SK-B | M04 | I05 |
| 2027 | D10 | B07 | 3016 | E16 | C10 | SK-C | A14 |  |
| 2028 | B11 | B07 | 3017 | G16 | C10 | SK-C | M16 |  |
| 2029 | A12 | B06 | 3018 | I16 | D11 | SK-C | L16 | I07 |
| 2030 | A12 | C06 | 3019 | D17 | D11 | SK-D | D09 | I07 |
| 2031 | G15 | C09 | 3020 | D16 | D10 | SK-E | I17 |  |
| 2032 | G16 | C09 | 3021 | H16 | D10 | SK-E | D17 | I08 |
| 2033 | E16 | B09 | 3022 | G17 | I13 |  |  |  |
| 2034 | D17 | I11 | 3023 | E17 | I13 |  |  |  |
| 2035 | I17 | I11 | 3024 | F17 | H13 |  |  |  |
| 2036 | G17 | I13 | 3025 | G17 | H13 |  |  |  |

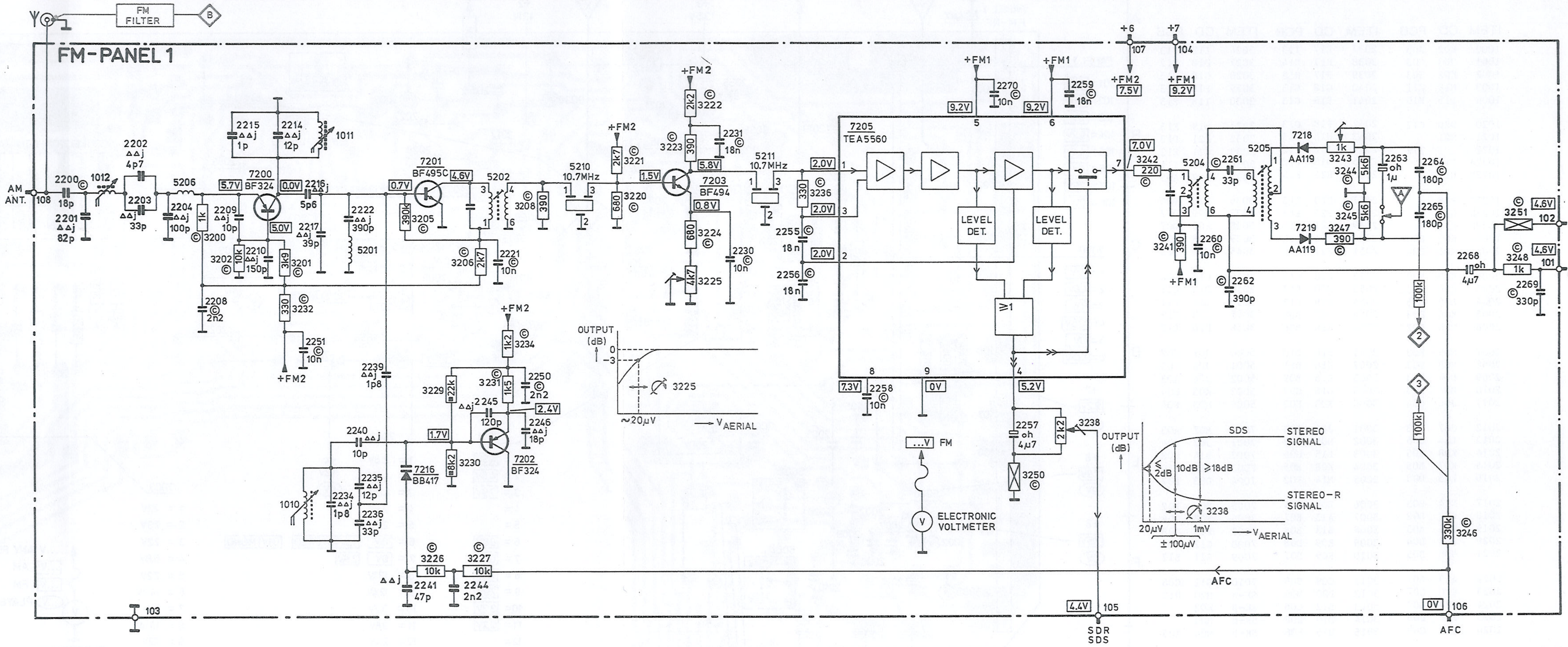

MAIN PANEL
PANEL 1 FM–RF
4µ7
PANEL 1
101 = 4.6V
102 = 4.6V
103 = 0V
104 = 9.2V
105 = 4.4V
106 = 0V
107 = 7.5V
108 = 0V
7000
1 = 3.1V
2 = 4.6V
3 = 9.1V
4 = 13.5V
5 = 0V
6 = 13.5V
+7 9.2V 0V
+8 7.9V 0V
+6 7.5V 0V
+3 13.5V
+2 13.1V
+4 9.2V 0V
+1 14.3V
+14.4V R L
CONNECTOR 1 TO TAPEDECK
7001
1 = 4.9V
2 = 4.9V
3 = 7.9V
4 =
5 =
6 = 0.8V
7 = 0V
8 = 7.9V
9 = 7.9V
10 = 2.2V
11 = 2.2V
12 =
13 =
14 = 2.4V
15 = 8.0V
16 = 0V
7002
1 = 2.8V
2 = 4.5V
3 = 4.2V
4 = 2.8V
5 = 2.1V
6 = 0V 1.1V STEREO 0.1V MONO
7 = 0V 2.9V
8 = 13.1V
9 = 12.4V
10 = 3.2V
11 = 3.8V
12 = 2.4V
13 = 12.3V 10V
14 = 0V STEREO 1.5V MONO
15 = 13.0V 0.8V STEREO 13.0V MONO
16 = 0V
7003
1 = 7.3V
2 = 7.3V
3 = 7.2V
4 = 6.8V
5 = 7.2V
6 = 14.3V
7 = 0V
8 = 13.3V
9 = 7.2V
10 = 14.2V
11 = 14.2V
12 = 7.3V
13 = 7.3V
...V ANY POSITION
...V AM
...V FM
...V PLAYBACK
ELECTRONIC VOLTMETER
MW
FM
STEREO
db
SK-B
SK-C
SK-D
SK-E
MW
LW
FM
MONO/STEREO
DB
3111 113 3350
3111 115 99082
29807 D13

## PARTS LOCATION

PCB= printed circuit board

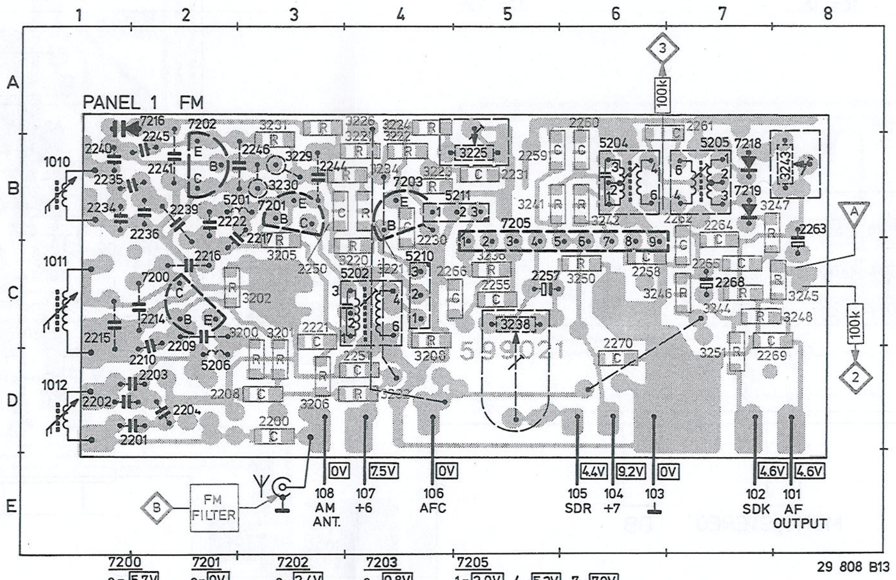
| ITEM | PCB | ITEM | PCB | ITEM | PCB |
|---|---|---|---|---|---|
| 1010 | B01 | 2255 | C05 | 3231 | A03 |
| 1011 | C01 | 2256 | C04 | 3232 | D04 |
| 1012 | D01 | 2257 | C05 | 3234 | B04 |
| 2200 | D03 | 2258 | C06 | 3236 | C05 |
| 2201 | D02 | 2259 | B05 | 3238 | C05 |
| 2202 | D01 | 2260 | A06 | 3241 | B05 |
| 2203 | D02 | 2261 | A07 | 3242 | B06 |
| 2204 | D02 | 2262 | B07 | 3243 | B08 |
| 2208 | D02 | 2263 | C08 | 3244 | C07 |
| 2209 | D02 | 2264 | B07 | 3245 | C08 |
| 2210 | D02 | 2265 | C07 | 3246 | C06 |
| 2214 | C02 | 2268 | C07 | 3247 | B08 |
| 2215 | C01 | 2269 | D07 | 3248 | C08 |
| 2216 | C02 | 2270 | D06 | 3250 | C06 |
| 2217 | B03 | 3200 | C02 | 3251 | D07 |
| 2221 | C03 | 3201 | C03 | 5201 | B02 |
| 2222 | B02 | 3202 | C03 | 5202 | C04 |
| 2230 | C04 | 3205 | C03 | 5204 | B06 |
| 2231 | B05 | 3206 | D03 | 5205 | B07 |
| 2234 | B01 | 3208 | C04 | 5206 | D02 |
| 2235 | B01 | 3220 | C04 | 5210 | C04 |
| 2236 | B02 | 3221 | C04 | 5211 | B04 |
| 2239 | B02 | 3222 | B04 | 7200 | C02 |
| 2240 | B01 | 3223 | B04 | 7201 | B03 |
| 2241 | B02 | 3224 | A04 | 7202 | A02 |
| 2244 | B03 | 3225 | B05 | 7203 | B04 |
| 2245 | B02 | 3226 | A04 | 7205 | B05 |
| 2246 | B03 | 3227 | B04 | 7216 | A02 |
| 2250 | C03 | 3229 | B03 | 7218 | B07 |
| 2251 | D04 | 3230 | B03 | 7219 | B07 |

| | |
|---|---|
| C | 2200 · 2202 2204 2208÷2210.2215.2214.2216.2217.2251. 2222. · 2221. · 2231.2230. · 2255.2256. · 2270. · 2259. · 2260.2261.2262. · 2263.2264.2265. · 2268. · 2269. |
| C | 2201 · 2203 · 2234÷2236.2239÷2241. 2244.2245. 2250.2246 · 2258. · 2257. |
| R | 3200. 3202. · 3201.3232 · 3205. 3229.3230.3206.3231.3234.3208.3226.3227. 3221.3220. · 3222÷3225. · 3236. · 3250 3238. · 3242. 3241. · 3247.3243.3244.3245. · 3246 · 3248.3251 |
| MISC | 1012 · 5206 · 7200. · 1010. 1011. · 5201. · 7216.7201. · 5202.7202. · 5210. · 7203. · 5211. · 7205. · 5204. · 5205. · 7218.7219. |



FM FILTER
B
FM-PANEL 1
AM ANT.
108
1012
2200 18p
2201 82p
2202 4p7
2203 33p
5206
2204 100p
3200
7200 BF324
5.7V
0.0V
5.0V
2209 10p
2210 150p
3202 10k
3201 3k9
2216 5p6
2217 39p
2208 2n2
3232 330
2251 10n
2215 1p
2214 12p
1011
2222 390p
5201
7201 BF495C
0.7V
4.6V
3205 390k
5202
3206 2k7
2221 10n
3208 390
5210 10.7MHz
+FM2
3222 2k2
3223 390
3221 2k7
3220 680
2231 18n
7203 BF494
5.8V
1.5V
0.8V
3224 680
3225 4k7
2230 10n
5211 10.7MHz
3236 330
2255 18n
2256 18n
2.0V
+FM1
2270 10n
2259 18n
9.2V
7205 TEA5560
LEVEL DET.
≥1
2258 10n
7.3V
0V
5.2V
2257 4μ7
3238 2k2
3250
+6
+7
107
104
+FM2 7.5V
+FM1 9.2V
7.0V
3242 220
5204
2261 33p
5205
7218 AA119
3243 1k
3244 5k6
2263 1μ
2264 180p
2265 180p
3245 5k6
7219 AA119
3247 390
3241 390
2260 10n
2262 390p
2268 4μ7
3248 1k
2269 330p
3251
4.6V
102 SDK
101 AF OUTPUT
100k
2
3
3246 330k
2239 1p8
2240 10p
1010
2234 1p8
2235 12p
2236 33p
7216 BB417
3229 22k
3230 8k2
3231 1k5
3234 1k2
2245 120p
2246 18p
2250 2n2
2.4V
1.7V
7202 BF324
3226 10k
3227 10k
2241 47p
2244 2n2
OUTPUT (dB)
0
-3
~20μV
V AERIAL
...V FM
ELECTRONIC VOLTMETER
OUTPUT (dB)
SDS
STEREO SIGNAL
STEREO-R SIGNAL
≤2dB
10dB
≥18dB
20μV
1mV
±100μV
AFC
4.4V
105 SDR SDS
0V
106 AFC
103

29501D4



1
2
3
4
5
6
7
8
A
B
C
D
E
PANEL 1 FM
1010
1011
1012
100k
3
2
0V
7.5V
0V
4.4V
9.2V
0V
4.6V
4.6V
108 AM ANT.
107 +6
106 AFC
105 SDR
104 +7
103
102 SDK
101 AF OUTPUT
FM FILTER
B

29 808 B13

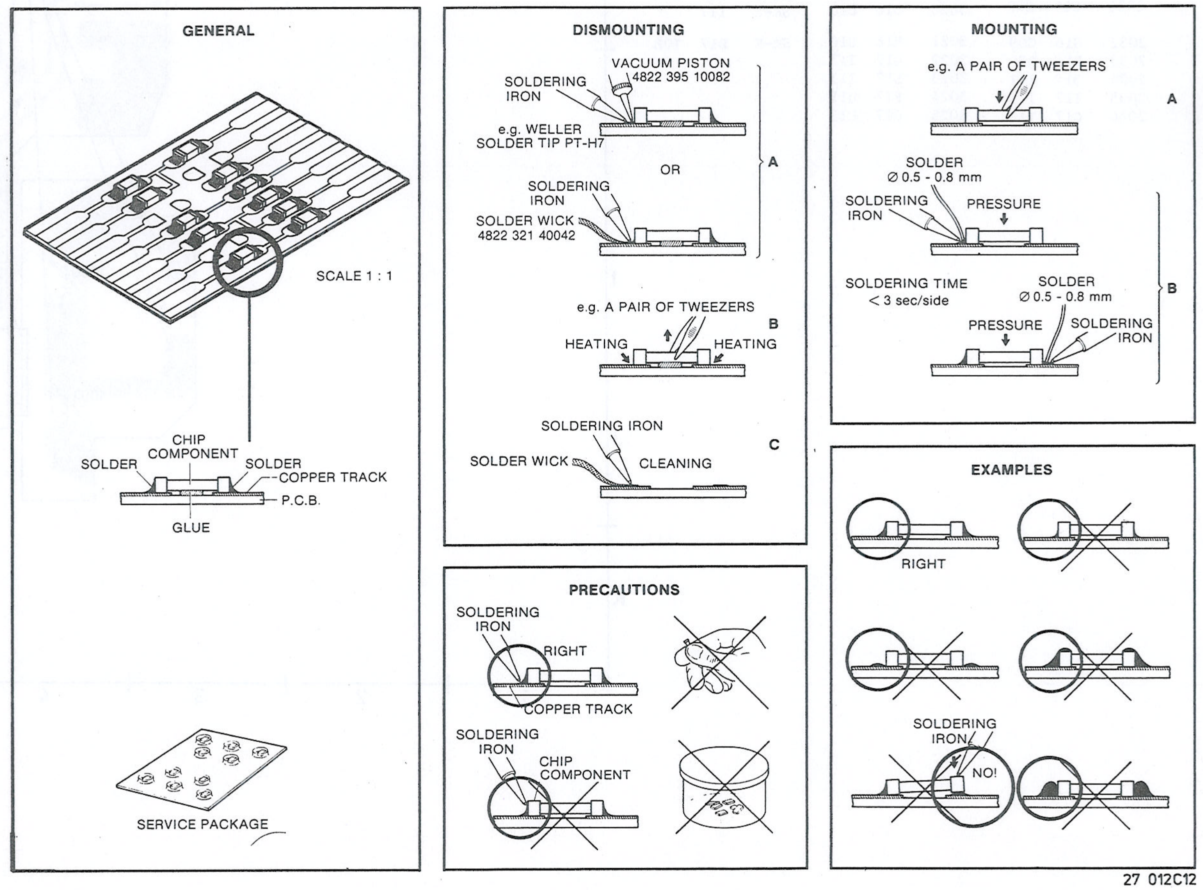
7200
e = 5.7V
b = 5.0V
c = 0V

7201
e = 0V
b = 0.7V
c = 4.6V

7202
e = 2.4V
b = 1.7V
c = 0V

7203
e = 0.8V
b = 1.5V
c = 5.8V

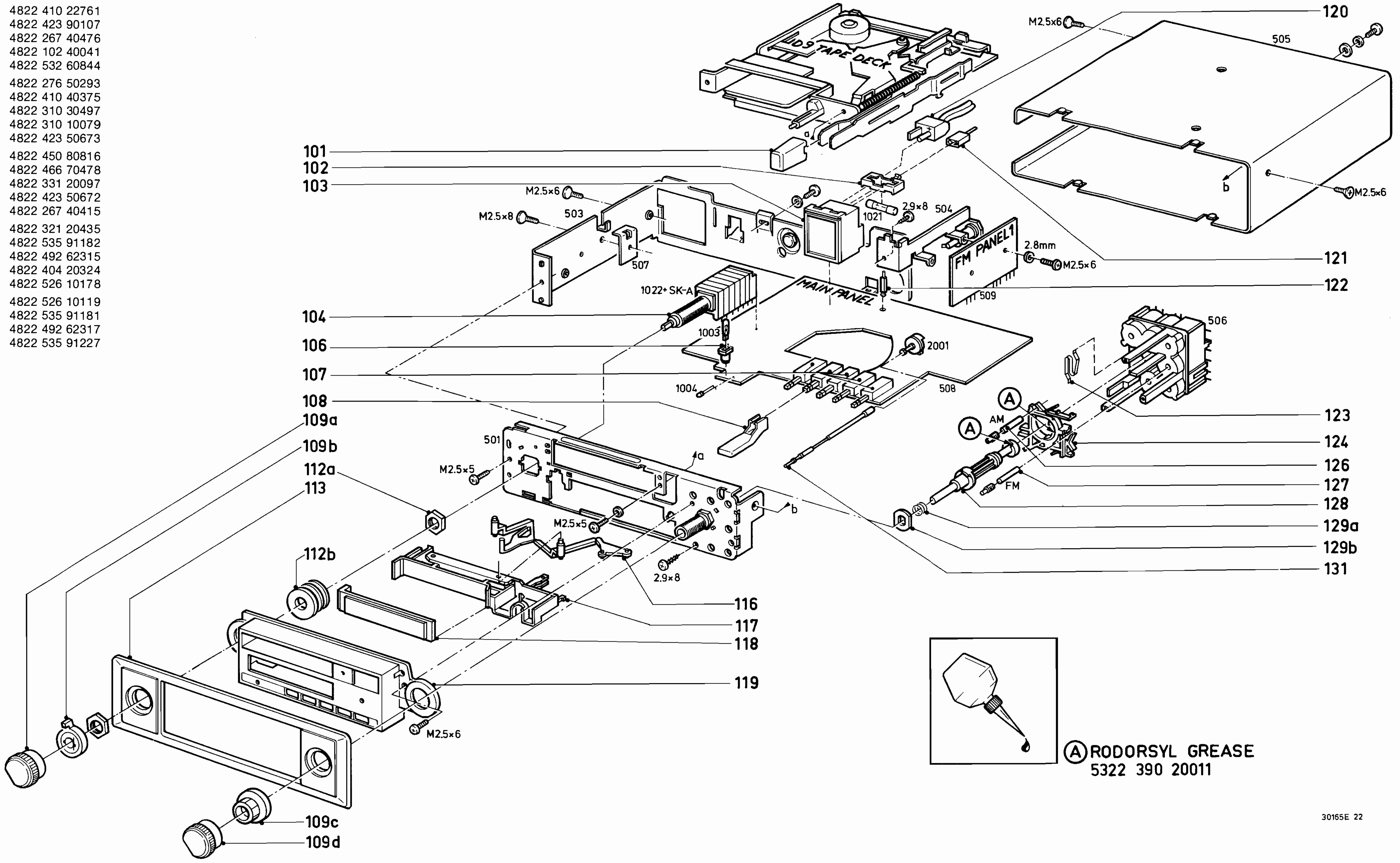
7205
1 = 2.0V 4 = 5.2V 7 = 7.0V
2 = 2.0V 5 = 9.2V 8 = 7.3V
3 = 2.0V 6 = 9.2V 9 = 0V



GENERAL
SCALE 1 : 1
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE
DISMOUNTING
SOLDERING IRON
VACUUM PISTON 4822 395 10082
e.g. WELLER SOLDER TIP PT-H7
OR
SOLDERING IRON
SOLDER WICK 4822 321 40042
A
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
SOLDER WICK
CLEANING
C
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER Ø 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME < 3 sec/side
SOLDER Ø 0.5 - 0.8 mm
PRESSURE
SOLDERING IRON
B
PRECAUTIONS
SOLDERING IRON
RIGHT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
EXAMPLES
RIGHT
SOLDERING IRON
NO!

27 012C12

| | |
|---|---|
| 101 | 4822 410 22761 |
| 102 | 4822 423 90107 |
| 103 | 4822 267 40476 |
| 104 | 4822 102 40041 |
| 106 | 4822 532 60844 |
| 107 | 4822 276 50293 |
| 108 | 4822 410 40375 |
| 109 | 4822 310 30497 |
| 112 | 4822 310 10079 |
| 113 | 4822 423 50673 |
| 116 | 4822 450 80816 |
| 117 | 4822 466 70478 |
| 118 | 4822 331 20097 |
| 119 | 4822 423 50672 |
| 120 | 4822 267 40415 |
| 121 | 4822 321 20435 |
| 122 | 4822 535 91182 |
| 123 | 4822 492 62315 |
| 124 | 4822 404 20324 |
| 126 | 4822 526 10178 |
| 127 | 4822 526 10119 |
| 128 | 4822 535 91181 |
| 129 | 4822 492 62317 |
| 131 | 4822 535 91227 |


120
M2.5×6
505
b
M2.5×6
101
102
103
M2.5×6
M2.5×8
503
507
2.9×8
1021
504
FM PANEL1
2.8mm
M2.5×6
121
122
509
1022+ SK-A
MAIN PANEL
104
1003
106
2001
107
1004
508
506
108
109a
109b
112a
113
501
M2.5×5
a
b
M2.5×5
2.9×8
A
A
AM
FM
123
124
126
127
128
129a
129b
131
112b
116
117
118
119
M2.5×6
109c
109d
30165E 22

Ⓐ RODORSYL GREASE
5322 390 20011

## ADJUSTMENTS AND CHECKS

### 1. General

a. During all adjustments and checks the power supply voltage should be 14.4 V, while the output of the carradio should be terminated with an impedance of 4 Ω/10 W.

b. The generator signals should via adapter circuits be injected into the aerial socket. The levels of the injected signals are equal to those presented to the input of the adapter circuits.
For the various adapter circuits refer to Service Information "General Car Radio" A80-301.

c. The measurement and adjustment conditions are:
- stereo switch in stereo position
- balance control in electrical mid-position
- tone controls in mechanical mid-position
- db switched off.

d. The injected RF signals should be applied as follows, unless specified otherwise in the tables:
- for FM signals: f= 1 kHz with a sweep Δf= 22.5 kHz.
  The level should be chosen so as to reach the limiting point (α —3 dB).
  This level is approx. 20 µV. Also refer to par. 3.b.
- for AM signals: f= 1 kHz, AM-modulated 30%.
  Select the lowest possible level.

e. The various FM adjustments should be performed at switched-off AFC.
Connect for this purpose pin 106 of panel 1 to ground.

f. During adjustment of the tuning coils and limiting point (α —3 dB) the metal cover should be slid over the apparatus. This is necessary to prevent detuning of the RF circuits due to the stray capacitance of the cover.

### 2. AM

| SK | ⊛→ | ◇ | ▭ | ⌀ | ⊡ |
|---|---|---|---|---|---|
| MW | 510 kHz | ◇A | max. L | 5001 | ◇1 max. ~ |
| MW | 510 kHz | ◇A | max. L | 1001 | ↕ ◇1 max. ~ |
| | 550 kHz | | | 1000 | |
| | 1500 kHz | | ▭ | 2001 | |
| LW | 146 kHz | ◇A | max. L | 5004 | |
| | 175 kHz | | ▭ | 1002 | ↕ ◇1 max. ~ |
| | 250 kHz | | | 5003 | |

↕ Repeat

### 3. FM

| a. SK | ⊛→ | ◇ | ▭ | ⌀ | ▣ | ⊡ |
|---|---|---|---|---|---|---|
| FM | 97 MHz [1] | ◇B | ▭ | 5202<br>5204 | ◇2 [2] | |
| | | | | 5205<br>3243 | ↕ ◇3 [3] | |
| FM | 87.33 MHz | ◇B | max. L | 1010 | | ◇1 max. ~<br>[4] |
| | 97 MHz | | ▭ | 1012<br>1011 | | |

↕ Repeat

[1] Switch off AFC, open bridge ▽A.

[2] Adjust response curve for maximum height and symmetry.

[3] Adjust S-curve for crossing at zero reference point and for max. symmetry.

[4] Switch on AFC, close bridge ▽A.

*Note:*
For response curve and S-curve verification, the oscilloscope must be externally triggered on the X input with a sweep signal.

**b. Adjustment and check of the limiting point (α —3 dB)**

After the adjustments specified under 3a, it is required to check the limiting point (α —3 dB) (IF sensitivity). The limiting point is reached when the level of the input signal is chosen so that an increase of this signal does not result in an increase of the output signal by more than 3 dB (also refer to the graph in the circuit diagram).

The limiting point is checked as follows:
- Connect an AC millivoltmeter to test point ◇1.
- Inject a 97 MHz - 1 mV RF signal in ◇B and tune the receiver to this signal.
- Adjust the volume control for a 0 dB reading.
- Reduce the injected signal until the voltmeter reads —3 dB.
- This signal should now have a level of 14 - 20 µV.

If this level is not attained, apply a signal of 17 µV and adjust R3225 for a reading of —3 dB.

**c. Smooth mono/stereo take-over (SDS)**

The SDS requires adjustment when the radio:
1) takes the stereo position too late or not at all.
2) takes the stereo position at too small an aerial signal (in this case the noise level will usually be unacceptably high).

R3238 determines, as a function of the aerial signal, the range within the apparatus gradually changes over from mono to stereo reception.

The adjustment procedure is as follows:
- Connect AC millivoltmeters across the 4 Ω loads of both the LH and RH channel.
- Inject a 97 MHz - 80 µV RF **stereo** signal in ◇B and tune the receiver to this frequency.
- Adjust the balance control for equal meter readings.
- Adjust the volume control for a reading of 0 dB.
- Remove the R signal from the stereo signal and adjust R3238 for a difference in voltmeter readings of 10 dB ± 2 dB.
- Check the "10 dB crosstalk" while removing the L signal instead of the R signal.

**d. Check of the Signal Dependent Response (SDR)**

The SDR automatically corrects the treble reproduction dependent on the strength of the injected aerial signal.

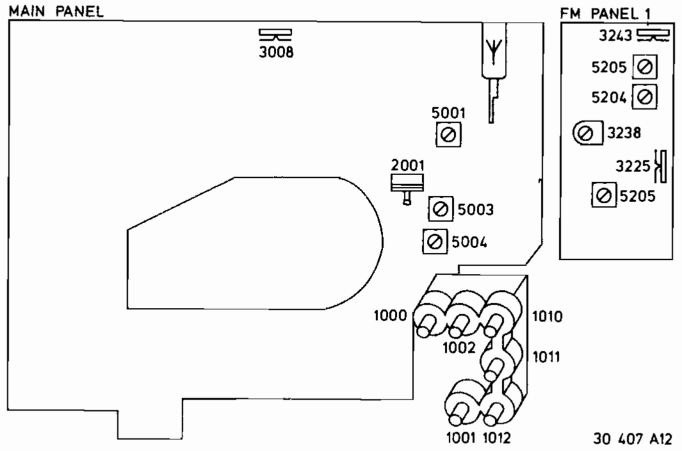


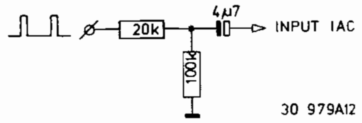
Fig. 2

The check is performed as follows:
- Connect AC-millivoltmeter to test point ◇1.
- Select MONO mode.
- Inject a 97 MHz - 1 mV RF signal with a pre-emphasis of 50 µs f = 1 kHz in ◇B.
- Tune apparatus for maximum and adjust the volume control for a 0 dB reading.
- Increase the modulated AF signal to f = 10 kHz; now the reading should be ⩽ —2 dB.
- Reduce the level of the injected signal to 30 µV while f = 10 kHz is maintained; now the reading should be ⩽ 8 dB.

**e. Check of the IAC - interference pulse sensitivity**

When the interference pulse sensitivity of the IAC is too great, interference pulses with relatively small amplitudes are also eliminated. This might thus lead to distortion if there is much interference on the AF signal. This is expressed in unquiet reception.
The interference pulse sensitivity can be checked as follows:
- Close bridge ▽V.
- Inject (via electrolytic capacitor 4µ7) a pulse signal in ◇C with a repetition frequency of 300 µs and a pulse time of 10 µs having an amplitude of $V_S$ ≈ 40 mV (see Fig. 3a).

*Note:*
The pulse can e.g. be obtained by means of pulse generator PM5705, the signal being injected via the voltage divider shown below.



- Connect oscilloscope to test point ◇5.
- When the amplitude of the interference pulse signal is being raised, the pulse measured on ◇5 (see Fig. 3b) should drop out at a certain moment. At this moment the IAC circuit becomes operative. The amplitude of the injected signal should be $V_S$ ≈ 50 mV.

### 4. VCO in stereo decoder

This adjustment is carried out with no aerial signal.

Connect a frequency counter to test point ◇4 (via 1 MΩ).
Adjust R3008 for a counter reading of 76 kHz ± 300 Hz.

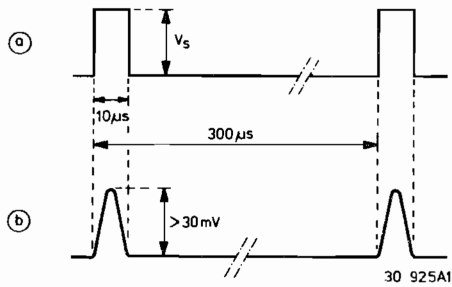
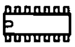


Fig. 3

| | |
|---|---|
| AA119 | 4822 130 30312 |
| BA315 | 4822 130 30843 |
| BA317 | 4822 130 30847 |
| BB417 | 4822 130 41374 |
| CQW21 Green | 4822 130 31839 |
| 1N4001 | 4822 130 31438 |

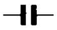
| | |
|---|---|
| BF324 | 4822 130 41448 |
| BF494 | 4822 130 44195 |
| BF495C | 4822 130 41499 |



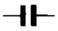
| | | |
|---|---|---|
| 7002 | TDA1005A | 4822 209 80514 |
| 7003 | TDA1510 | 4822 209 81317 |
| 7001 | TEA5550 | 4822 209 80966 |
| 7205 | TEA5560 | 4822 209 81018 |

**Miscellaneous**

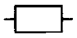
| | | |
|---|---|---|
| 1000 | MW aerial | 4822 156 20702 |
| 1001 | AM oscillator | 4822 156 20706 |
| 1002 | LW aerial | 4822 156 20704 |
| 1003 | 12 V-60 mA | 4822 134 40502 |
| 1010 | FM oscillator | 4822 156 20715 |
| 1011 | FM aerial | 4822 156 20714 |
| 1012 | FM aerial | 4822 156 20714 |
| 1020 | | 4822 156 21109 |
| 1021 | T2A | 4822 253 30025 |



| | | | |
|---|---|---|---|
| 2001 | 120 pF | | 4822 125 50081 |
| 2016 | 220 μF | 50 V | 4822 124 40331 |
| 2017 | 100 μF | | 4822 124 21146 |
| 2019 | 220 nF | | 4822 124 21124 |
| 2023 | 4μ7 | 35 V | 4822 124 40349 |
| 2027 | 100 nF | | 4822 121 41586 |
| 2028 | 100 nF | | 4822 121 41586 |
| 2046 | 100 μF | | 4822 124 21146 |
| 2047 | 100 μF | | 4822 124 21146 |
| 2050 | 1000 μF | 10 V | 4822 124 40336 |
| 2051 | 1000 μF | 10 V | 4822 124 40336 |
| 2054 | 1000 μF | 16 V | 4822 124 40335 |
| 2055 | 100 μF | 16 V | 4822 124 40413 |
| 2056 | 220 μF | 16 V | 4822 124 21158 |
| 2200 | 18 pF | | 4822 122 31755 |
| 2208 | Chip 2n2 | | 4822 122 31644 |
| 2216 | 5p6 | | 4822 122 31047 |
| 2221 | Chip 10 nF | | 4822 122 31728 |
| 2222 | 390 pF | | 4822 122 30091 |
| 2230 | Chip 10 nF | | 4822 122 31728 |
| 2231 | Chip 18 nF | | 4822 122 31759 |
| 2244 | 2n2 | | 4822 122 30114 |
| 2250 | Chip 2n2 | | 4822 122 31644 |
| 2251 | Chip 10 nF | | 4822 122 31728 |
| 2255 | Chip 18 nF | | 4822 122 31759 |
| 2256 | Chip 18 nF | | 4822 122 31759 |
| 2258 | Chip 10 nF | | 4822 122 31728 |
| 2259 | Chip 18 nF | | 4822 122 31759 |
| 2260 | Chip 10 nF | | 4822 122 31728 |
| 2261 | Chip 33 pF | | 4822 122 31756 |



| | | |
|---|---|---|
| 2262 | Chip 390 pF | 4822 122 31758 |
| 2264 | Chip 180 pF | 4822 122 31757 |
| 2265 | Chip 180 pF | 4822 122 31757 |
| 2269 | Chip 330 pF | 4822 122 31642 |
| 2270 | Chip 10 nF | 4822 122 31728 |

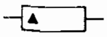
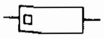
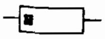
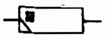
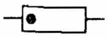
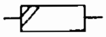
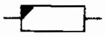


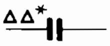
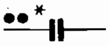
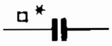
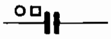
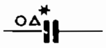
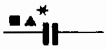
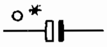
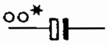
| | | |
|---|---|---|
| 3000 | VDR | 4822 116 20069 |
| 3008 | Trimpot 10k | 4822 100 10024 |
| 3200 | Chip 1k | 4822 111 90092 |
| 3201 | Chip 3k9 | 4822 111 90159 |
| 3202 | Chip 10k | 5322 111 90093 |
| 3205 | Chip 390k | 4822 111 90182 |
| 3206 | Chip 2k7 | 4822 111 90179 |
| 3208 | Chip 390E | 5322 111 90138 |
| 3220 | Chip 680E | 4822 111 90162 |
| 3221 | Chip 2k7 | 4822 111 90179 |
| 3222 | Chip 2k2 | 5322 111 90102 |
| 3223 | Chip 390E | 5322 111 90138 |
| 3224 | Chip 680E | 4822 111 90162 |
| 3225 | Trimpot 4k7 | 4822 100 10236 |
| 3226 | Chip 10k | 5322 111 90093 |
| 3227 | Chip 10k | 5322 111 90093 |
| 3231 | Chip 1k5 | 4822 111 90151 |
| 3232 | Chip 330E | 5322 111 90106 |
| 3234 | Chip 1k2 | 5322 111 90096 |
| 3236 | Chip 330E | 5322 111 90106 |
| 3238 | Trimpot 2k2 | 4822 100 10029 |
| 3241 | Chip 390E | 5322 111 90138 |
| 3242 | Chip 220E | 4822 111 90178 |
| 3243 | Trimpot 1k | 4822 100 10021 |
| 3244 | Chip 5k6 | 5322 111 90114 |
| 3245 | Chip 5k6 | 5322 111 90114 |
| 3246 | Chip 330k | 4822 111 90181 |
| 3247 | Chip 390E | 5322 111 90138 |
| 3248 | Chip 1k | 5322 111 90092 |
| 3250 | Chip 0E | 4822 111 90163 |
| 3251 | Chip 0E | 4822 111 90163 |

| | | |
|---|---|---|
| 5000 | Interference | 4822 158 10107 |
| 5001 | IF | 4822 156 20807 |
| 5002 | SFT468BK | 4822 121 41179 |
| 5003 | LW aerial | 4822 156 20703 |
| 5004 | LW oscillator | 4822 156 20705 |
| 5201 | Absorption | 4822 157 50739 |
| 5202 | IF-FM | 4822 153 50207 |
| 5204 | Ratio detector | 4822 153 50108 |
| 5205 | Ratio detector | 4822 153 50102 |
| 5206 | | 4822 157 50204 |
| 5210 | SFE 10.7 MS | 4822 242 70249 |
| 5211 | SFE 10.7 MS | 4822 242 70249 |

**Thick film unit**

| | | |
|---|---|---|
| 7000 | IAC | 4822 214 50292 |

| | | | |
|---|---|---|---|
|  | 0.2 W<br>(CR16) | ⩽ 220 kΩ<br>> 270 kΩ | 5%<br>10% |
|  | 0.33 W<br>(CR25) | ⩽ 1 MΩ<br>> 1 MΩ | 5%<br>10% |
|  | 0.33 W<br>(SFR25) | | 5% |
|  | 0.25 W<br>(VR25) | ⩽ 10 MΩ<br>> 10 MΩ | 5%<br>10% |
|  | 0.5 W<br>(CR37) | ⩽ 1 MΩ<br>> 1 MΩ | 5%<br>10% |
|  | 0.67 W<br>(CR52) | | 5% |
|  | 1.15 W<br>(CR68) | | 5% |
| Ⓒ | Chip component | | |

| | |
|---|---|
|  | Ceramic plate |
|  | Polyester flat foil |
|  | Polyester mepolesco |
|  | Mylar<br>(Polyester flat foil small sized) |
|  | Micropoco |
|  | Tubular ceramic<br>(body colour pink or<br>yellow/green) |
|  | Miniature single elco |
|  | Subminiature tantalum cap. |

*a = 2,5 V
b = 4 V
c = 6,3 V
d = 10 V
e = 16 V
f = 25 V
g = 40 V
h = 63 V
j = 100 V
l = 125 V
m = 150 V
n = 160 V
q = 200 V
r = 250 V
s = 300 V
t = 350 V
u = 400 V
v = 500 V
w = 630 V
x = 1000 V
A = 1,6 V
B = 6 V
C = 12 V
D = 15 V
E = 20 V
F = 35 V
G = 50 V
H = 75 V
I = 80 V

30 534A

Service
Service
**Service Information**

1982-01-12

Cassette auto radio 22AC630

A83-305

During production the following modifications have been introduced:

- resistors 3057 and 3058 modified to 12 kΩ (■)
  *reason:* to improve the sound quality during on/off switching
- capacitors 2063 and 2064 modified to 15 nF (■▲)
  *reason:* to improve the AF response curve
- resistor 3005 modified to 200 Ω (■)
  *reason:* to improve the +6 supply voltage

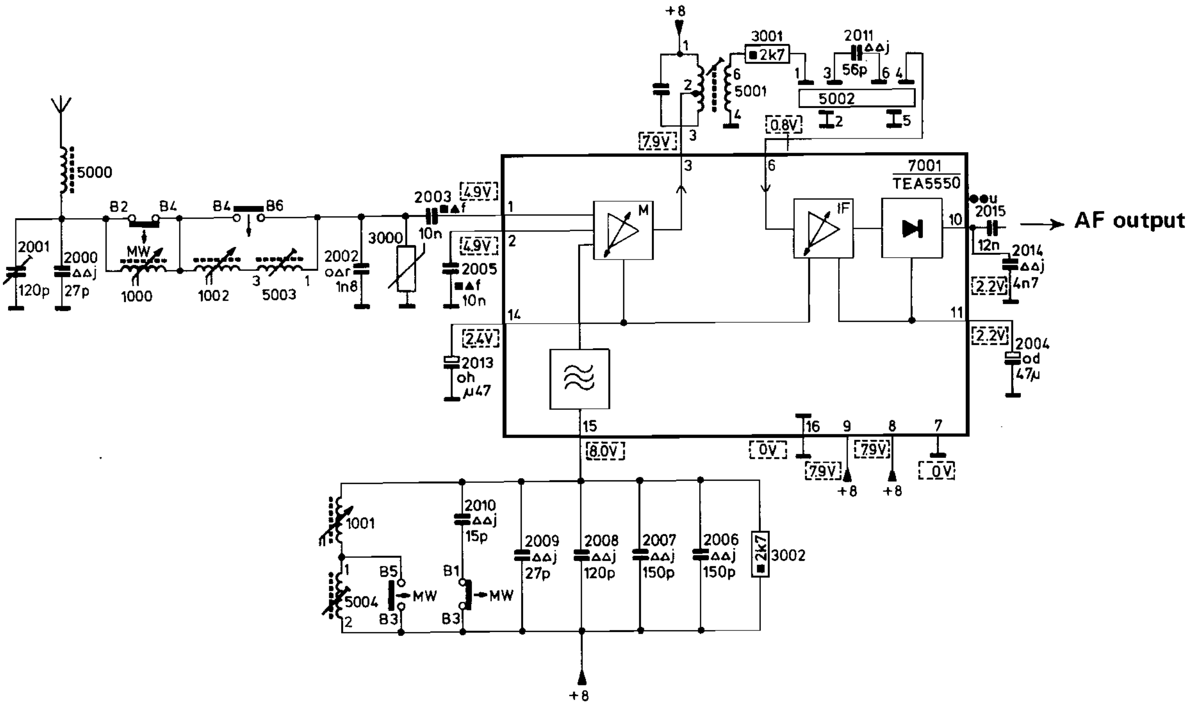
From week **239** onwards with factory code **FD01** the following modifications have been introduced:

- capacitor 2015 modified to 12 nF (●●)
  *reason:* to improve the AM response curve
- capacitors 2040 and 2041 modified to 220 nF (●●)
  *reason:* to prevent crackling noise from potentiometer
- trimpot 3238 modified to 4k7 (code number 4822 100 10029)
  *reason:* to improve the adjustment of the 10 dB crosstalk (SDS)

From week **249** onwards with factory code **FD02** the following modifications have been introduced:

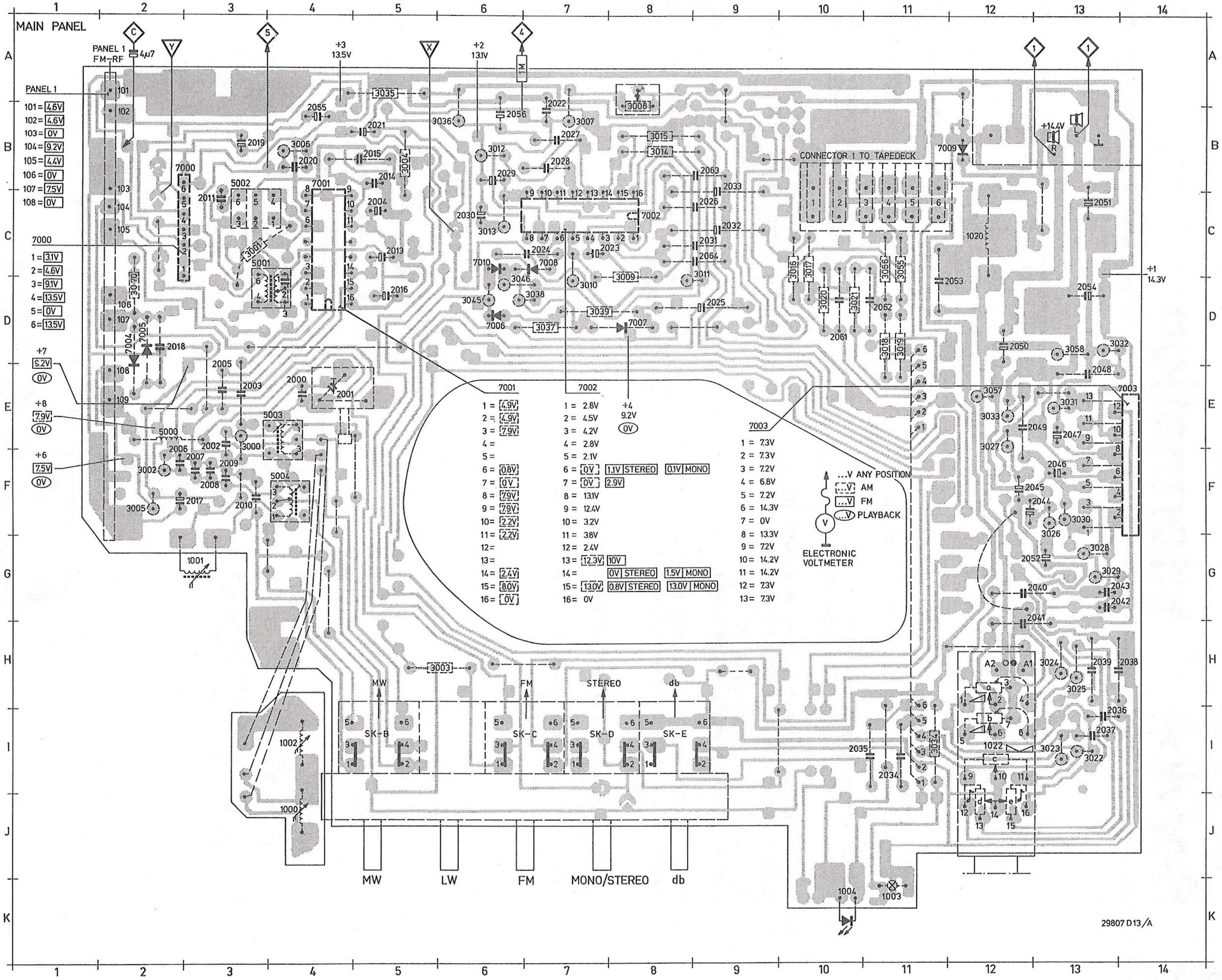
- capacitor 2012 deleted
  capacitor 2011 modified to 56 pF (code number 4822 122 31919)
  filter 5002 modified to SFZ468A (6 pins) with code number 4822 242 70275
  *reason:* modification of the AM selectivity
- IAC thick film unit 7000 has been modified to a unit with smaller dimensions with code number 4822 214 50305.
  The IAC units are not compatible.
  The supply voltage of the new IAC is now connected to pin 5 and the mass to pin 6

Due to above mentioned modifications and future modifications to the FM panel the copperside of the main panel has been modified on several places, see annexed diagram.


+8
3001
■2k7
2011
ΔΔj
56p
5001
5002
7.9V
0.8V
5000
B2
B4
B6
2003
4.9V
■▲f
10n
MW
2001
120p
2000
ΔΔj
27p
1000
1002
5003
2002
oΔr
1n8
3000
4.9V
2005
■▲f
10n
M
IF
7001
TEA5550
●●u
2015
12n
AF output
2014
ΔΔj
4n7
2.2V
2.2V
2004
od
47μ
2.4V
2013
oh
μ47
8.0V
0V
7.9V
7.9V
0V
1001
2010
ΔΔj
15p
2009
ΔΔj
27p
2008
ΔΔj
120p
2007
ΔΔj
150p
2006
ΔΔj
150p
■2k7
3002
5004
B5
B3
B1
B3
MW
MW
+8

Copyright reserved. Confidential information for Service-dealers

Printed in the Netherla


MAIN PANEL
PANEL 1 FM-RF
4µ7
PANEL 1
101 = 4.6V
102 = 4.6V
103 = 0V
104 = 9.2V
105 = 4.4V
106 = 0V
107 = 7.5V
108 = 0V
7000
1 = 3.1V
2 = 4.6V
3 = 9.1V
4 = 13.5V
5 = 0V
6 = 13.5V
+7 5.2V 0V
+8 7.9V 0V
+6 7.5V 0V
+3 13.5V
+2 13.1V
+4 9.2V 0V
+1 14.3V
+14.4V R L
CONNECTOR 1 TO TAPEDECK
7001
1 = 4.9V
2 = 4.9V
3 = 7.9V
4 =
5 =
6 = 0.8V
7 = 0V
8 = 7.9V
9 = 7.9V
10 = 2.2V
11 = 2.2V
12 =
13 =
14 = 2.4V
15 = 8.0V
16 = 0V
7002
1 = 2.8V
2 = 4.5V
3 = 4.2V
4 = 2.8V
5 = 2.1V
6 = 0V 1.1V STEREO 0.1V MONO
7 = 0V 2.9V
8 = 13.1V
9 = 12.4V
10 = 3.2V
11 = 3.8V
12 = 2.4V
13 = 12.3V 10V
14 = 0V STEREO 1.5V MONO
15 = 13.0V 0.8V STEREO 13.0V MONO
16 = 0V
7003
1 = 7.3V
2 = 7.3V
3 = 7.2V
4 = 6.8V
5 = 7.2V
6 = 14.3V
7 = 0V
8 = 13.3V
9 = 7.2V
10 = 14.2V
11 = 14.2V
12 = 7.3V
13 = 7.3V
...V ANY POSITION
...V AM
...V FM
...V PLAYBACK
V
ELECTRONIC VOLTMETER
MW
FM
STEREO
db
SK-B
SK-C
SK-D
SK-E
MW
LW
FM
MONO/STEREO
db
1000
1001
1002
1003
1004
1020
1022
A1
A2
29807 D13/A

Service
Service
**Service** **Information**

1983-06-30

Cassette auto radio 22AC630/00/62/78

A83-324

**Correction** to service information A83-310

By mistake the diagrams of the FM panel have been printed in the unmodified version.
The annexed diagrams have been updated according the modifications mentioned in A83-310.

**Modification**

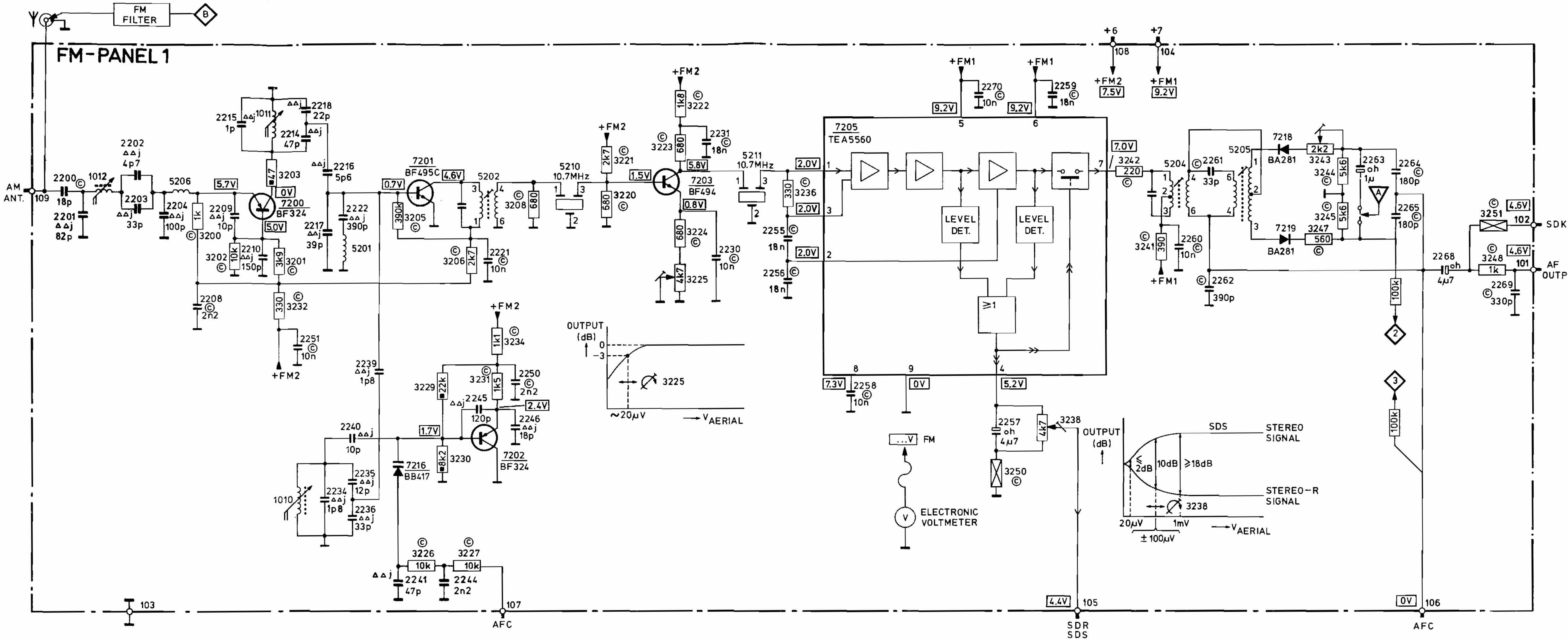
During production a ceramic capacitor of 2,2 pF (ΔΔ) has been added on the main panel between aerial input (point 109 of FM panel) and mass.

*Reason:* To decrease oscillator radiation into the aerial in position FM.

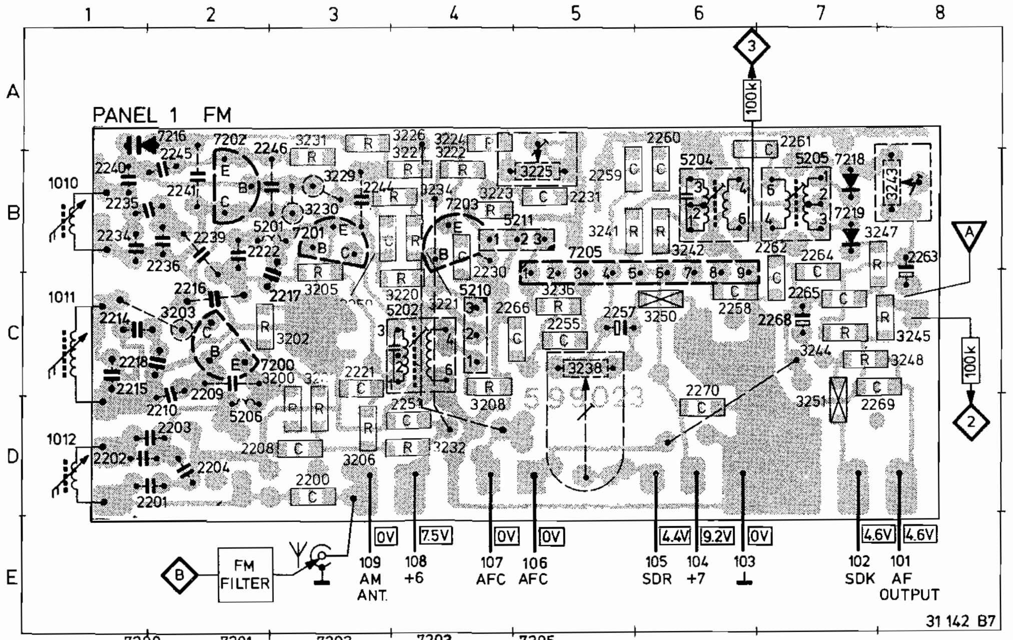
Copyright reserved. Confidential information for Service-dealers

Printed in the Netherlands

|  |  |
|---|---|
| C | 2200 2202 2204 2208÷2210 2214÷2218 2251. 2222. 2221. 2231.2230. 2255.2256. 2270. 2259. 2260.2261.2262. 2263.2264.2265. 2268. 2269. |
| C | 2201 2203 2234÷2236.2239÷2241. 2244.2245. 2250.2246 2258. 2257. |
| R | 3200. 3202. 3203.3201.3232 3205. 3229.3230.3206.3231.3234.3208.3226.3227. 3221.3220. 3222÷3225. 3236. 3250 3238. 3242. 3241. 3247.3243.3244.3245. 3248.3251 |
| MISC | 1012 5206 7200.1011.1010 5201. 7216.7201. 5202.7202. 5210. 7203. 5211. 7205. 5204. 5205. 7218.7219. |


FM-PANEL 1
FM FILTER
B
AM ANT.
109
1012
2200
18p
2201
82p
2202
4p7
2203
33p
2204
100p
5206
5.7V
3200
1k
2209
10p
2210
150p
3202
10k
7200
BF324
0V
5.0V
3201
3k9
2208
2n2
330
3232
2251
10n
+FM2
2215
1p
1011
2218
22p
2214
47p
3203
47
2216
5p6
2222
390p
2217
39p
5201
2239
1p8
2240
10p
1010
2234
1p8
2235
12p
2236
33p
7216
BB417
3226
10k
2241
47p
3227
10k
2244
2n2
107
AFC
103
7201
BF495C
0.7V
4.6V
390k
3205
5202
3206
2k7
2221
10n
3208
680
3229
22k
3231
1k5
3234
1k1
2250
2n2
2245
120p
2.4V
2246
18p
1.7V
8k2
3230
7202
BF324
5210
10.7MHz
+FM2
2k7
3221
680
3220
1.5V
1k8
3222
2231
18n
3223
680
5.8V
7203
BF494
0.8V
3224
680
4k7
3225
2230
10n
OUTPUT (dB)
0
-3
~20µV
VAERIAL
5211
10.7MHz
2.0V
330
3236
2255
18n
2256
18n
+FM1
2270
10n
9.2V
2259
18n
+6
+7
108
104
+FM2
7.5V
+FM1
9.2V
7205
TEA5560
LEVEL DET.
LEVEL DET.
≥1
7.0V
3242
220
7.3V
2258
10n
0V
5.2V
2257
4µ7
3238
4k7
3250
...V FM
ELECTRONIC VOLTMETER
OUTPUT (dB)
SDS
STEREO SIGNAL
STEREO-R SIGNAL
≤2dB
10dB
≥18dB
20µV
1mV
±100µV
4.4V
105
SDR
SDS
5204
2261
33p
3241
390
2260
10n
2262
390p
5205
7218
BA281
2k2
3243
3244
5k6
2263
1µ
3245
5k6
7219
BA281
3247
560
2264
180p
2265
180p
100k
2
3
100k
3251
4.6V
102
SDK
3248
1k
4.6V
101
AF OUTPUT
2268
4µ7
2269
330p
0V
106
AFC

31 065 D12/A


1
2
3
4
5
6
7
8
A
B
C
D
E
3
100k
PANEL 1 FM
A
100k
2
B
FM FILTER
0V
7.5V
0V
0V
4.4V
9.2V
0V
4.6V
4.6V
109 AM ANT.
108 +6
107 AFC
106 AFC
105 SDR
104 +7
103
102 SDK
101 AF OUTPUT
31 142 B7

7200
e = 5.7V
b = 5.0V
c = 0V

7201
e = 0V
b = 0.7V
c = 4.6V

7202
e = 2.4V
b = 1.7V
c = 0V

7203
e = 0.8V
b = 1.5V
c = 5.8V

7205
1 = 2.0V 4 = 5.2V 7 = 7.0V
2 = 2.0V 5 = 9.2V 8 = 7.3V
3 = 2.0V 6 = 9.2V 9 = 0V

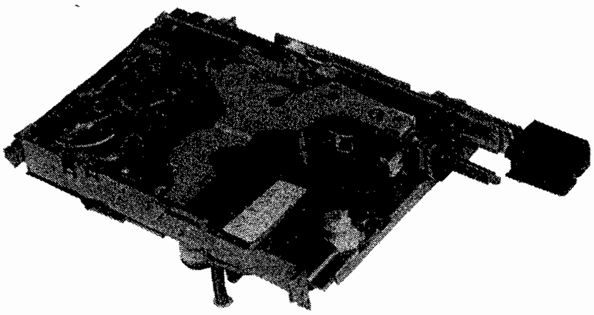
## PARTS LOCATION PANEL 1

|  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| 1010 | B01 | 2234 | B01 | 2264 | B07 | 3229 | B03 | 5206 | D02 |
| 1011 | C01 | 2235 | B01 | 2265 | C07 | 3230 | B03 | 5210 | C04 |
| 1012 | D01 | 2236 | B02 | 2268 | C07 | 3231 | A03 | 5211 | B04 |
| 2200 | D03 | 2239 | B02 | 2269 | D07 | 3232 | D04 | 7200 | C02 |
| 2201 | D02 | 2240 | B01 | 2270 | D06 | 3234 | B04 | 7201 | B03 |
| 2202 | D01 | 2241 | B02 | 3200 | C02 | 3236 | C05 | 7202 | A02 |
| 2203 | D02 | 2244 | B03 | 3201 | C03 | 3238 | C05 | 7203 | B04 |
| 2204 | D02 | 2245 | B02 | 3202 | C03 | 3241 | B05 | 7205 | B05 |
| 2208 | D02 | 2246 | B03 | 3203 | C02 | 3242 | B06 | 7216 | A02 |
| 2209 | D02 | 2250 | C03 | 3205 | C03 | 3243 | B08 | 7218 | B07 |
| 2210 | D02 | 2251 | D04 | 3206 | D03 | 3244 | C07 | 7219 | B07 |
| 2214 | C01 | 2255 | C05 | 3208 | C04 | 3245 | C08 |  |  |
| 2215 | C01 | 2256 | C04 | 3220 | C04 | 3247 | B08 |  |  |
| 2216 | C02 | 2257 | C05 | 3221 | C04 | 3248 | C08 |  |  |
| 2217 | B03 | 2258 | C06 | 3222 | B04 | 3250 | C06 |  |  |
| 2218 | C01 | 2259 | B05 | 3223 | B04 | 3251 | D07 |  |  |
| 2221 | C03 | 2260 | A06 | 3224 | A04 | 5201 | B02 |  |  |
| 2222 | B02 | 2261 | A07 | 3225 | B05 | 5202 | C04 |  |  |
| 2230 | C04 | 2262 | B07 | 3226 | A04 | 5204 | B06 |  |  |
| 2231 | B05 | 2263 | C08 | 3227 | B04 | 5205 | B07 |  |  |

2641

# Auto cassette deck D9-2

Service
Service
**Service**



28 759A12

# Service Manual

12V

(GB) Deck D9-2 is identical with deck D9-1, except for the following changes:
Item no. 56 is coded 4822 255 20096, however with no red LED.
Item no. 1701 red LED 4822 130 31398.

(NL) Met uitzondering van onderstaande wijzigingen is D9-2 gelijk aan D9-1 deck:
Pos. 56 wordt 4822 255 20096 echter zonder rode LED.
Pos. 1701 LED rood 4822 130 31398.

1668

(F) Exception faite des modifications ci-dessous, la mécanique du D9-2 est pareille à celle du D9-1:
Le code du rep. 56 devient 4822 255 20096 cependant sans LED rouge.
Rep. 1701 LED rouge - 4822 130 31398.

(D) Nachstehende Änderungen unbeachtet, ist Deck D9-2 gleich Deck D9-1:
Pos. 56 wird 4822 255 20096, jedoch ohne rote Leuchtdiodenanzeige;
Pos. 1701 Leuchtdiode (rot) 4822 130 31398.

(I) Eccetto le modifiche di cui sotto, il meccanismo del D9-2 è uguale a quello del D9-1:
Codice della pos. 56 diventa: 4822 255 20096 ma senza LED rosso.
Pos. 1701 - LED rosso - 4822 130 31398.

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

Subject to modification
4822 725 15022
Printed in The Netherlands

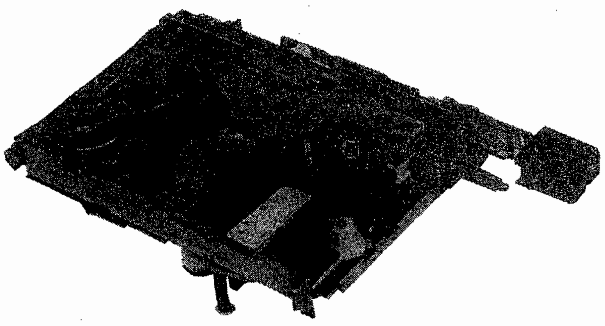
CS 83 917

2641

1668

# Auto Cassette deck D9-1

Service
Service
Service



28 759A12

# Service Manual

12 V ⊖

## (GB) TECHNICAL DATA

| | |
|---|---|
| Tape speed | : 4,76 cm/sec ±2% |
| Wow & flutter | : ⩽ 0,35% |
| Operating voltage | : 14,4 V |
| Fast winding time | : ⩽ 120 secs (C-60) |
| $V_0$ (cass. TC-FR/315 Hz) | : ⩾ 400 mV |

## (NL) TECHNISCHE GEGEVENS

| | |
|---|---|
| Bandsnelheid | : 4,76 cm/sec, ±2% |
| Wow & flutter | : ⩽ 0,35% |
| Werkingsspanning | : 14,4 V |
| Tijd snel opspoelen | : ⩽ 120 sec (C-60) |
| $V_u$ (cass. TC-FR/315 Hz) | : ⩾ 400 mV |

## (F) CARACTERISTIQUES TECHNIQUES

| | |
|---|---|
| Vitesse de défilement | : 4,76 cm/sec, ±2% |
| Pleurage et scintillement | : ⩽ 0,35% |
| Tension de fonctionnement | : 14,4 V |
| Durée de bobinage rapide | : ⩽ 120 sec (C-60) |
| $V_{sortie}$ (cass. TC-FR/315 Hz) | : ⩾ 400 mV |

## (D) TECHNISCHE DATEN

| | |
|---|---|
| Bandgeschwindigkeit | : 4,76 cm/sec, ±2% |
| Gleichlaufschwankungen | : ⩽ 0,35% |
| Betriebsspannung | : 14,4 V |
| SVL-Dauer | : ⩽ 120 s (mit C60-Cassette) |
| $V_a$ (Cass. TC-FR/315 Hz) | : ⩾ 400 mV |

## (I) DATI TECHNICI

| | |
|---|---|
| Velocità di trascinamento | : 4,76 cm/sec. ±2% |
| Wow e flutter | : ⩽ 0,35% |
| Tensione di lavoro | : 14,4 V |
| Tempo di avvolgimento | : ⩽ 120 sec (C-60) |
| $V_{uscita}$ (cass. TC-FR/315 Hz) | : ⩾ 400 mV |

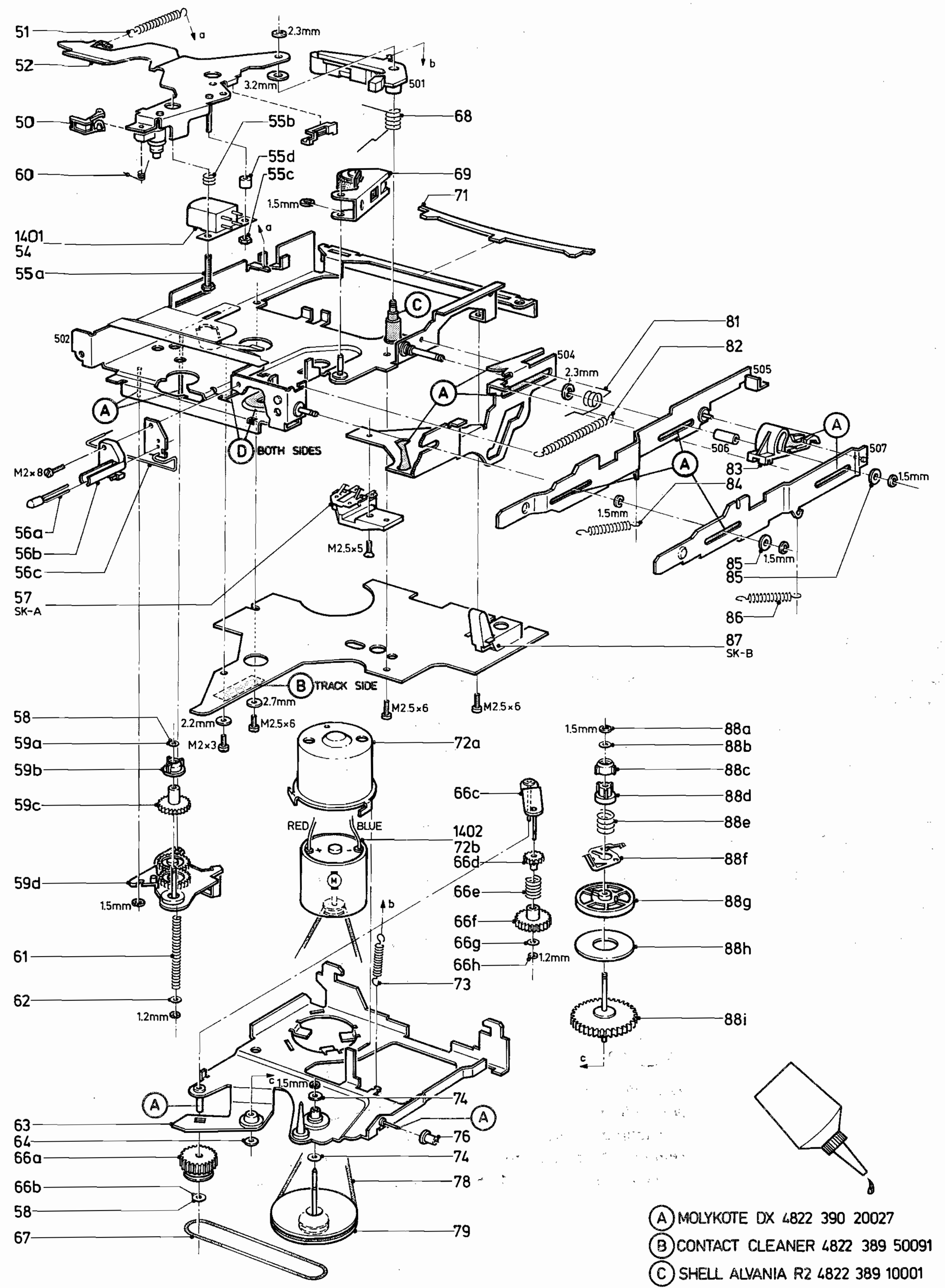
Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçio

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

Subject to modification
4822 725 14685
Printed in The Netherlands

CS 80 820

[illegible]


51
a
2.3mm
b
52
501
3.2mm
68
50
55b
55d
55c
60
69
1.5mm
71
1401
54
a
55a
C
502
81
82
504
2.3mm
505
A
A
A
506
A
507
D BOTH SIDES
M2×8
83
84
1.5mm
1.5mm
56a
56b
56c
M2.5×5
85
1.5mm
85
57
SK-A
86
87
SK-B
B TRACK SIDE
2.7mm
M2.5×6
M2.5×6
58
2.2mm
M2.5×6
M2×3
59a
59b
59c
72a
1.5mm
88a
88b
88c
88d
88e
88f
88g
88h
88i
66c
RED
BLUE
1402
72b
66d
66e
66f
66g
66h
1.2mm
59d
1.5mm
b
M
61
73
62
1.2mm
c
c
1.5mm
74
A
A
63
64
66a
76
74
66b
78
58
67
79

Ⓐ MOLYKOTE DX 4822 390 20027
Ⓑ CONTACT CLEANER 4822 389 50091
Ⓒ SHELL ALVANIA R2 4822 389 10001
Ⓓ MOLYKOTE 3484

27 891 E12

## Ⓓ EINSTELLUNGEN

*Benötigte Messgeräte:*

- Universal-Testcassette SBC133 4822 397 30039
- Wechselspannungs-Millivoltmeter

### Azimut

Einstellung soll mit komplettem Autoradio stattfinden.
- Millivoltmeter an Lautsprecherbuchsen schalten.
- Testcassette einlegen und das 8-kHz-Signal wiedergeben.
- Mit schraube 55a die Ausgangsspannung so einstellen, dass sie für sowohl den linken als auch den rechten Kanal gleich ist und den Höchstwert aufweist.
- Schraube 55a lacksichern.

### KONTROLLEN

*Benötigte Messgeräte:*

| | |
|---|---|
| — Friktionstestcassette (811/CTM) | 4822 395 30054 |
| — Universal-Testcassette SBC133 | 4822 397 30039 |
| — Gerät zum Messen der Tonhöhen schwankungen ("wow & flutter") | |

### 1. Reibkupplung 88, Abb. 1

- Friktionstestcassette (811/CTM) einlegen.
- Die VL-Friktion soll 45-60 p/cm betragen.

Nicht oder unregelmässig wickeln des Bandes in der Cassette ist auf folgende Ursachen zurückzuführen:
a. Zu viel Reibung in der Cassette
b. Zu geringe Reibungskraft beim Aufwickeln
Erst muss Mitnehmer 88c verdreht werden (Abb. 1).
Sollte dies nicht ausreichen, dann ist Rutschkupplung 88 zu ersetzen.

### 2. Tonhöhenschwankungen/Bandgeschwindigkeit

Die Kontrolle soll mit komplettem Autoradio erfolgen.
- Gerät zum Messen der Tonhöhenschwankungen an den Lautsprecherausgang schalten.
- Testcassette SBC133 einlegen und das 3150-Hz-Signal wiedergeben.
- Der Jaulwert soll ⩽ 0,35% sein.
- Die Bandgeschwindigkeit soll 4,76 m/s (±2%) sein.
- Die Geschwindigkeit lässt sich mit R3417 einstellen.

Bei einem übermässigen Jaulwert sollen folgende Bauteile auf ihr richtiges Funktionieren geprüft werden.

- Motor
- Andruckrolle
- Pese (beim Auswechseln die Seilrollen reinigen)
- Reibkupplung
- Schwungrad

### 3. Für übrige Einstellungen siehe Abbn. 2 bis 4

Es empfiehlt sich regelmässig W-Kopf, Andruckrolle und Tonwelle mit Alkohol zu reinigen.

## Ⓘ REGOLAZIONI

*Strumenti richiesti:*

- Cassetta campione SBC133 4822 397 30039
- Millivoltmetro AC

### Azimuth

La regolazione deve essere effettuata sul riproduttore collegato all'autoradio.
- Collegare un millivoltmetro all'uscita per altoparlante
- Inserire la cassetta SBC133 e riprodurre il segnale a 8 kHz
- Ruotare la vite 55a finchè la tensione letta per entrambi i canali sia la più elevata.
- Fissare con lacca la vite 55a.

### CONTROLLI

*Strumenti richiesti*

| | |
|---|---|
| — Cassetta campione per la frizione (811/CTM) | 4822 395 30054 |
| — Cassetta campione universale SBC133 | 4822 397 30039 |
| — Strumento wow e flutter | |

### 1. Forza della frizione 88, Fig. 1

- Inserire la cassetta della frizione (811/CTM)
- La forza di frizione deve essere compresa tra 45 ÷ 60 gr/cm

In caso di non avvolgimento o di avvolgimento irregolare del nastro nella cassetta ci possono essere tre ragioni:
a. Troppo attrito nella cassette
b. Frizione insufficente
Il pezzo di trascinamento 88c deve essere girato (Fig. 1). Se non basta ancora, sostituire la coppia di frizione 88.

### 2. Wow e Flutter/velocità del nastro

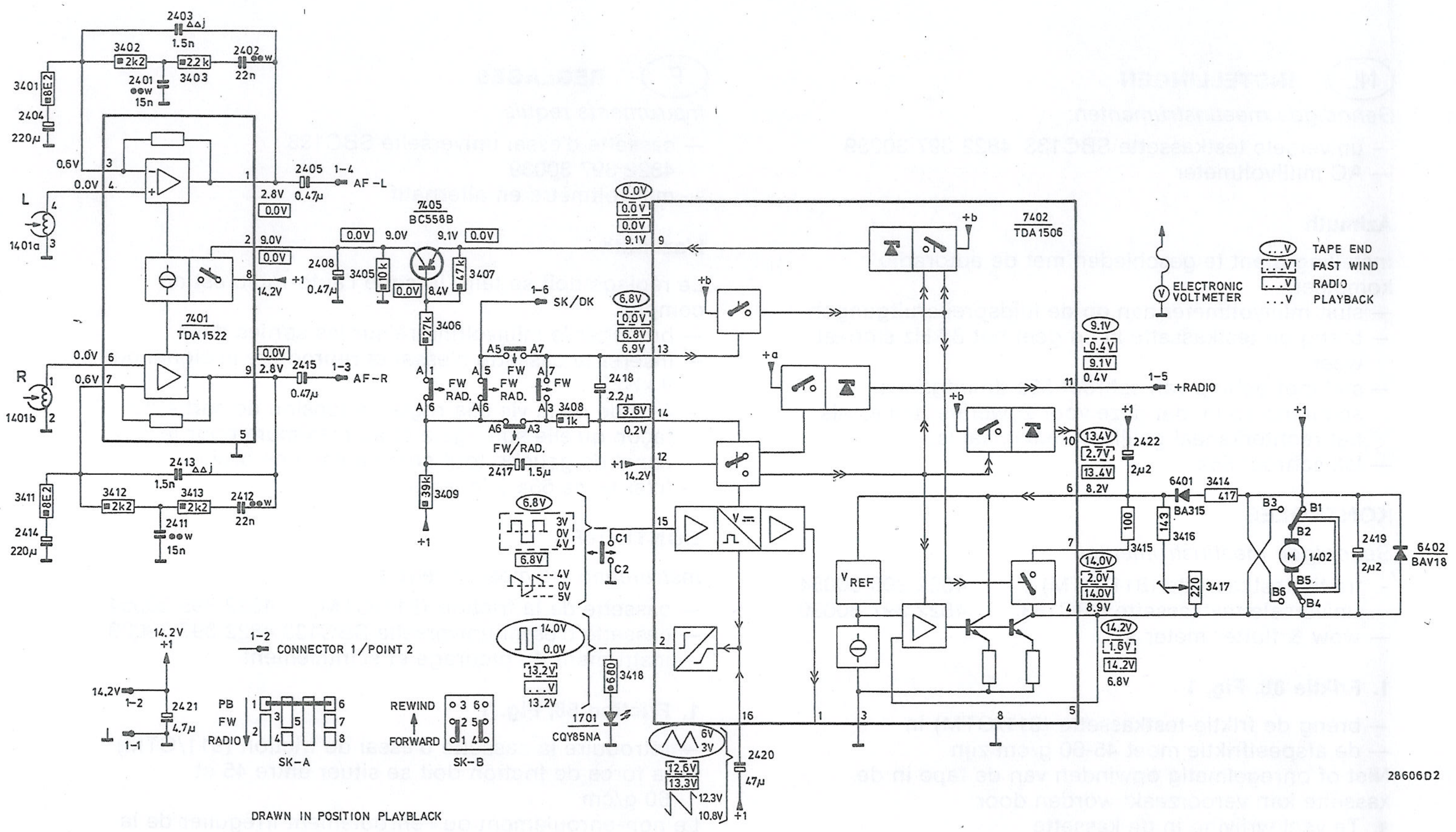
Questo controllo deve essere effettuato sul riproduttore collegato all'autoradio
- Collegare un misuratore di Wow en Flutter all'uscita per altoparlante
- Insetire la cassetta campione SBC133 e riprodurre il segnale a 3150 Hz
- Il valore di Wow e Flutter deve essere ⩽ 0,35%
- La velocità deve essere 4,76 cm/sec (±2%)
- Regolare la velocità tramite R3417

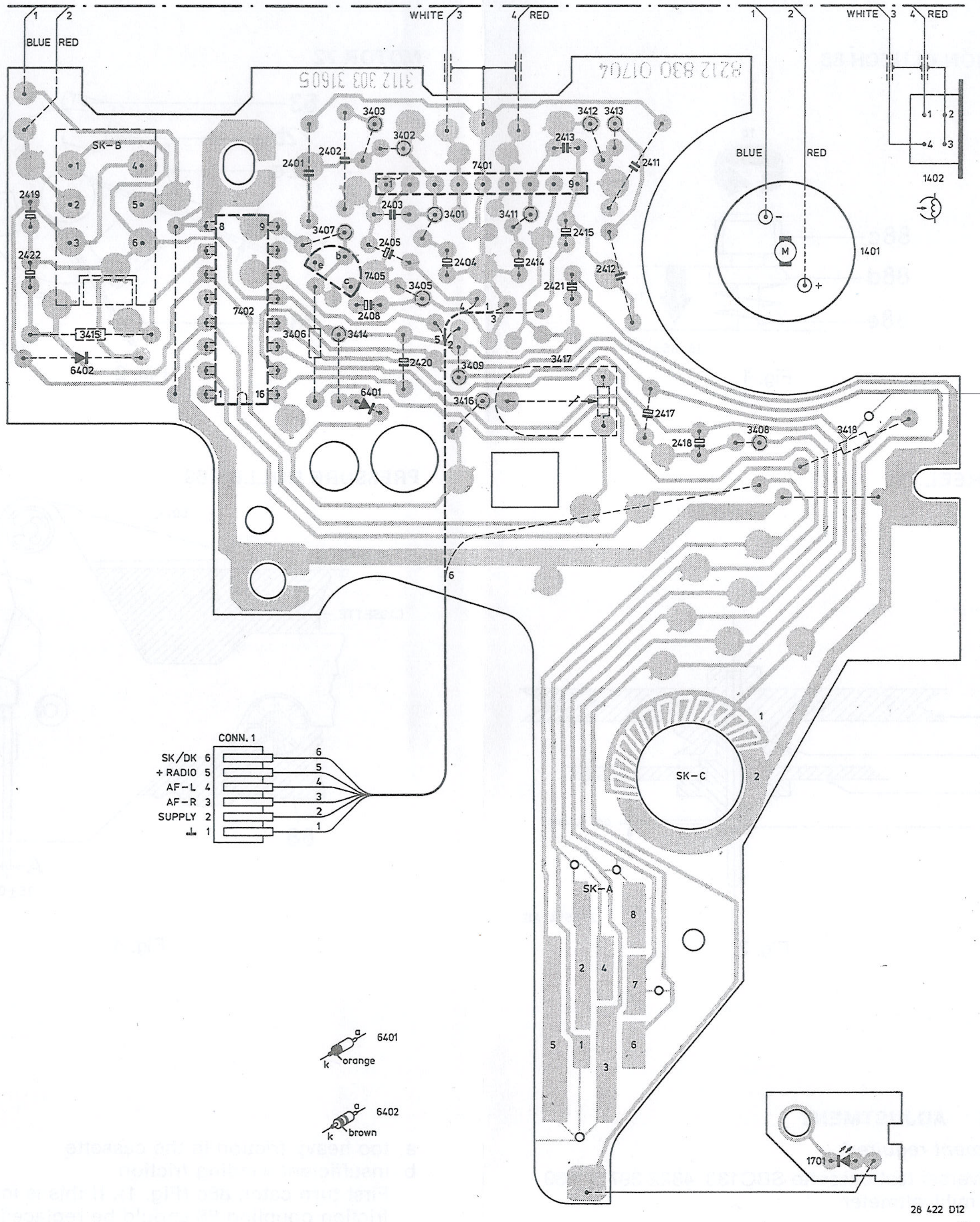
Nel caso ci sia un valore eccessivo di Wow e Flutter, bisogna controllare le seguenti parti se funzionano in modo corretto:

- Motore
- Rullo pressore
- Cinghia di trascinamento (nel caso di sostituzione, pulire le puleggie)
- Frizione
- Volano

### 3. Per le altre regolazioni, vedere Fig. 2-4

Consigliamo di pulire periodicamento la testina di cancellazione, il rullo pressore e il capstan con alcool.


2403 ΔΔj 1.5n
3402 2k2
3403 2.2k
2402 ●●w 22n
3401 8E2
2401 ●●w 15n
2404 220µ
0.6V
0.0V
L
1401a
2405 0.47µ
1-4 AF-L
2.8V
7405 BC558B
9.0V
9.1V
2408 0.47µ
3405 10k
3407 4.7k
8.4V
14.2V
7401 TDA1522
3406 27k
1-6 SK/DK
A5 A7 FW
A1 A6 FW RAD.
FW/RAD.
A3
3408 1k
2418 2.2µ
2417 1.5µ
R
1401b
2415 0.47µ
1-3 AF-R
2413 ΔΔj 1.5n
3412 2k2
3413 2k2
2412 ●●w 22n
3411 8E2
2411 ●●w 15n
2414 220µ
3409 39k
C1
C2
3V 0V 4V
6.8V
4V 0V 5V
14.0V 0.0V
13.2V
13.2V
3418 680
1701 CQY85NA
6V 3V
12.6V
13.3V
12.3V 10.8V
2420 47µ
14.2V +1
1-2 CONNECTOR 1/POINT 2
2421 4.7µ
1-1
PB FW RADIO
SK-A
REWIND FORWARD
SK-B
7402 TDA1506
+a
+b
+RADIO 1-5
9.1V 0.4V 9.1V 0.4V
13.4V 2.7V 13.4V 8.2V
2422 2µ2
6401 BA315
3414 417
3415 100
3416 143
3417 220
14.0V 2.0V 14.0V 8.9V
14.2V 1.6V 14.2V 6.8V
V REF
B1 B2 B3 B4 B5 B6
M 1402
2419 2µ2
6402 BAV18
ELECTRONIC VOLTMETER
...V TAPE END
...V FAST WIND
...V RADIO
...V PLAYBACK
DRAWN IN POSITION PLAYBLACK
28606D2


BLUE
RED
WHITE
SK-B
SK-A
SK-C
7401
7402
7405
1401
1402
CONN. 1
SK/DK 6
+RADIO 5
AF-L 4
AF-R 3
SUPPLY 2
⊥ 1
6401 orange
6402 brown
1701
26 422 D12

## MECHANICAL PARTS

| | | | |
|---|---|---|---|
| 50 | 4822 403 51692 | 68 | 4822 492 51448 |
| 51 | 4822 492 32121 | 69 | 4822 528 70321 |
| 52 | 4822 403 51678 | 71 | 4822 492 62559 |
| 55 | 4822 310 10148 | 73 | 4822 492 32115 |
| 56 | 4822 255 30077 | 74 | 4822 532 51264 |
| 57 | 4822 277 20761 | 76 | 4822 532 10765 |
| 58 | 4822 532 50692 | 78 | 4822 358 30261 |
| 59 | 4822 403 51683 | 79 | 4822 528 60169 |
| 60 | 4822 492 40974 | 81 | 4822 492 62558 |
| 61 | 4822 492 51446 | 82 | 4822 492 51447 |
| 62 | 4822 532 51319 | 83 | 4822 403 51679 |
| 63 | 4822 403 51681 | 84 | 4822 492 32116 |
| 64 | 4822 532 50268 | 86 | 4822 492 32117 |
| 66 | 4822 403 51682 | 87 | 4822 277 20759 |
| 67 | 4822 358 30335 | 88 | 4822 528 20347 |

## ELECTRICAL PARTS

| —‖— | | |
|---|---|---|
| 2404 | 220 uF 50% 10 V | 4822 124 40181 |
| 2405 | 470 nF 50% 63 V | 4822 124 40239 |
| 2408 | 470 nF 50% 63 V | 4822 124 40239 |
| 2414 | 220 uF 50% 10 V | 4822 124 40181 |
| 2415 | 470 nF 50% 63 V | 4822 124 40239 |
| 2417 | 1,5 uF 50% 63 V | 4822 124 40243 |
| 2418 | 2,2 uF 50% 63 V | 4822 124 40244 |
| 2419 | 2,2 uF 50 V | 4822 124 40459 |
| 2420 | 47 uF 50% 63 V | 4822 124 40253 |
| 2421 | 4,7 uF 50% 63 V | 4822 124 40246 |
| 2422 | 2,2 uF 50 V | 4822 124 40459 |
| **—▭—** | | |
| 3414 | 417 E 0.5% 0,4 W | 4822 116 51486 |
| 3415 | 100 E | 4822 110 73081 |
| 3416 | 143 E 1% 0,4 W | 5322 116 54485 |
| 3417 | 220 E | 4822 100 10469 |
| **—▶|— Ⓚ ▭** | | |
| 6401 | BA315 | 4822 130 30843 |
| 6402 | BAV18 | 4822 130 30899 |
| 7401 | TDA1522 PRE-AMP | 4822 209 81178 |
| 7402 | TDA1506 Motor contr. | 4822 209 81177 |
| 7405 | BC558B | 4822 130 44197 |
| **MISCELLANEOUS** | | |
| 1401 | Head, playback | 4822 249 10125 |
| 1402 | Motor | 4822 361 20261 |

| | | | |
|---|---|---|---|
| ▲ | 0.2 W<br>(CR16) | ⩽ 220 kΩ<br>> 270 kΩ | 5%<br>10% |
| □ | 0.33 W<br>(CR25) | ⩽ 1 MΩ<br>> 1 MΩ | 5%<br>10% |
| ■ | 0.33 W<br>(SFR25) | | 5% |
| ■ | 0.25 W<br>(VR25) | ⩽ 10 MΩ<br>> 10 MΩ | 5%<br>10% |
| ● | 0.5 W<br>(CR37) | ⩽ 1 MΩ<br>> 1 MΩ | 5%<br>10% |
| ▨ | 0.67 W<br>(CR52) | | 5% |
| ◤ | 1.15 W<br>(CR68) | | 5% |

| | |
|---|---|
| ΔΔ* | Ceramic plate |
| ●●* | Polyester flat foil |
| □* | Polyester mepolesco |
| ○□ | Mylar<br>(Polyester flat foil small sized) |
| ○Δ* | Micropoco |
| ■Δ* | Tubular ceramic<br>(body colour pink or yellow/green) |
| ○* | Miniature single elco |
| ○○* | Subminiature tantalum cap. |

*a = 2,5 V
b = 4 V
c = 6,3 V
d = 10 V
e = 16 V
f = 25 V
g = 40 V
h = 63 V
j = 100 V
l = 125 V
m = 150 V
n = 160 V
q = 200 V
r = 250 V
s = 300 V
t = 350 V
u = 400 V
v = 500 V
w = 630 V
x = 1000 V
A = 1,6 V
B = 6 V
C = 12 V
D = 15 V
E = 20 V
F = 35 V
G = 50 V
H = 75 V
I = 80 V

27037A/B

Service
Service
Service Information

1982-10-22

Car Cassette Deck D9

A82-340

**Corrections of the Service Manual**

Add: Code number of item 85-4822 532 11057

**Changes in the course of production:**

- At the start of production, 2419 and 2422, 2.2 μF-16 V tantalum, were changed to 2.2 μF-50 V mini-electrolytic capacitor. For Service the tantalum electrolytics mentioned in the Manual can be used. Furthermore a 2.6 mm pressure washer was added underneath the screws for fixation of the PCB.
- Also spring 70-4822 492 62843 was added to the bearing for spindle 88.
  *Reason:* to prevent the belt from running off pulley 66a.
- In week 214 the following items were
  deleted: 2401, 2403, 2411, 2413
  added: 2406, 2416 (1.8 nF △△j) between point 4 (point 6 resp.) of IC7401 and ground.
  changed: 3403, 3413 changed to 5.6 k.
  *Reason:* To prevent engine voltage peaks from getting to the inputs of the IC via the capacitors.

In week 226 the diameter of flywheel 79 was enlarged and furthermore spring 70 was deleted.
*Reason:* to increase the winding torque.

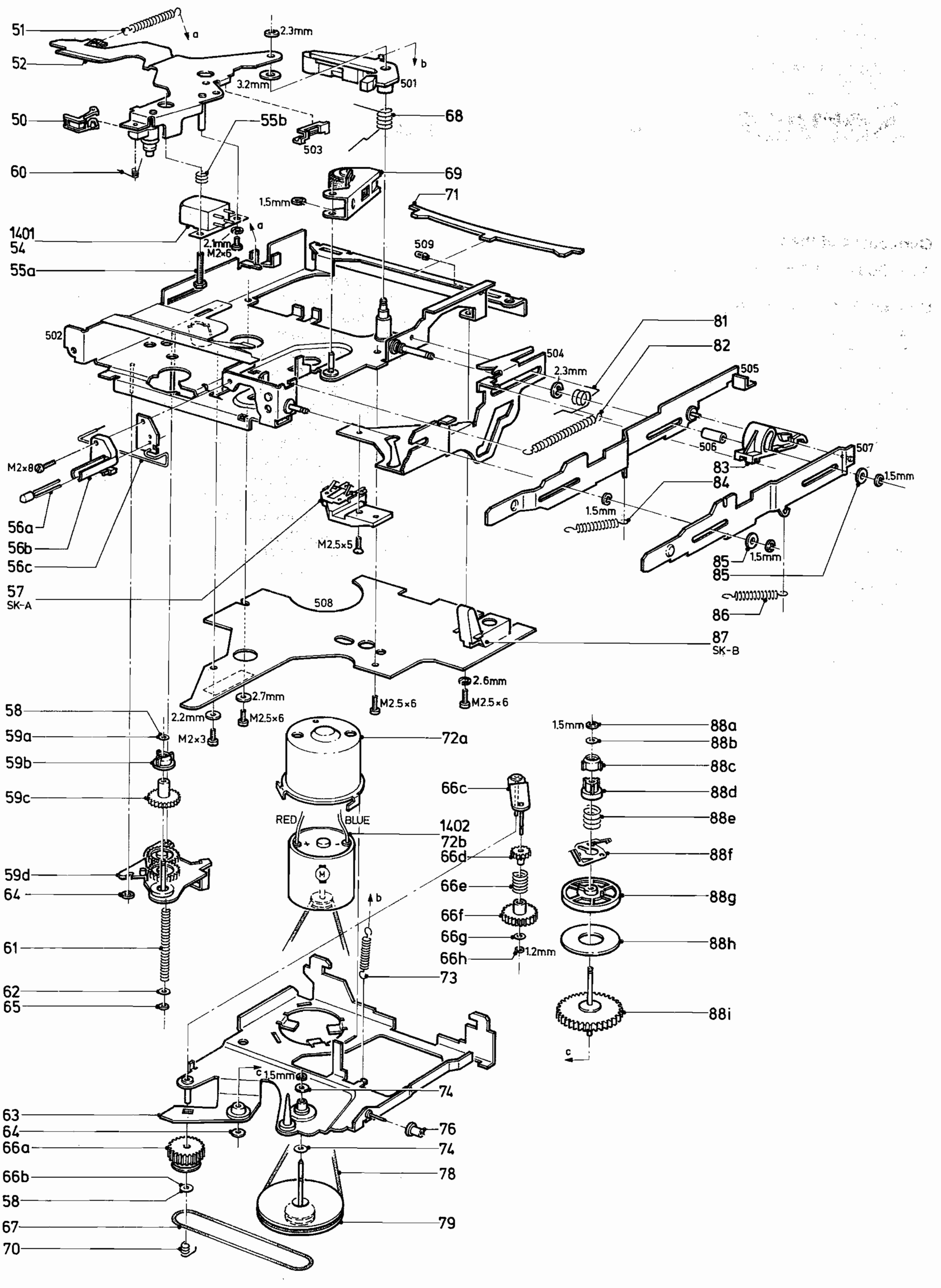
In week 234 the bolt on bracket 52 was replaced by a riveted spacer, nut 55c by a cylindrical screw M2x6, and was a pressure washer of 2,1 mm added. Furthermore spacer 55d was deleted.
*Reason:* introduction of fixed head height.
Note: The stock of head bracket 52 with bolt will be used up. For Service mounting kit 55 for head 54 will remain unchanged.

In week 237 the 1,2 mm clamping ring, situated on the spindle with spring 61, was replaced by plastic ring 65-4822 532 50262. Furthermore the 1.5 mm clamping ring for fixing item 59 to the tape deck, was replaced by plastic ring 64-4822 532 50268.
*Reason:* to simplify assembly.
Furthermore pulley 66a was changed (larger diameter and flange).
*Reason:* to increase the winding torque and for reinforcement.

CS 84 427

Copyright reserved. Confidential information for Service-dealers

Printed in the Netherlands


a
2.3mm
b
3.2mm
1.5mm
2.1mm
M2×6
a
2.3mm
M2×8
1.5mm
1.5mm
M2.5×5
1.5mm
SK-A
SK-B
2.6mm
2.7mm
M2.5×6
M2.5×6
2.2mm
M2.5×6
1.5mm
M2×3
RED
BLUE
b
1.2mm
c
c
1.5mm

27 891 E12/A

83-12-21

D9 Tape-deck

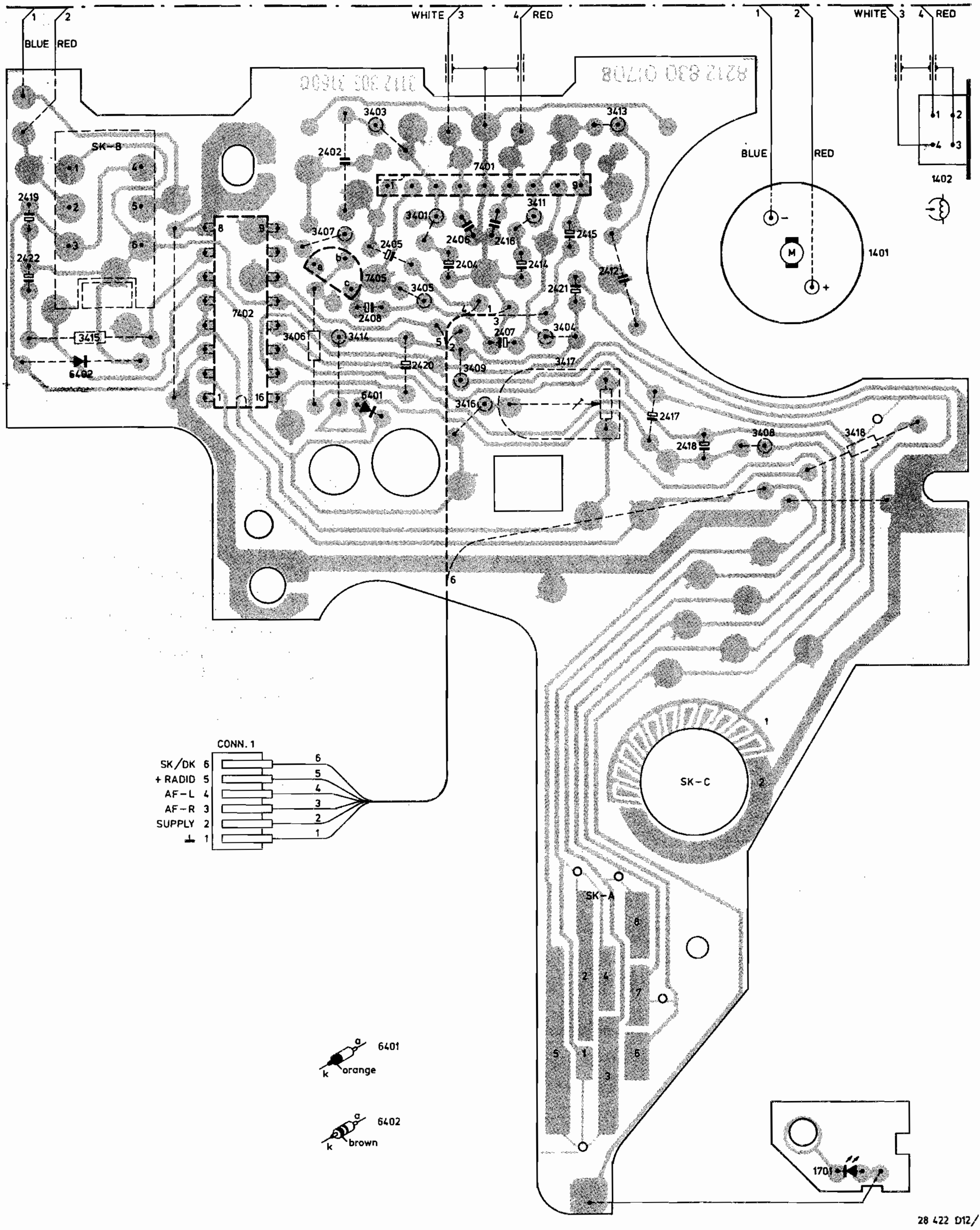
A83-339

# Service Service Service Information

Previously published: A82-340

Changes introduced in the course of production:

- Flywheel 79 has been changed in a plastic version. The metal and plastic flywheels can be interchanged without any problem.
  *Reason:* Simplification of the production.
- Under change code AH01252 the following items have been added to version D9-1: 3404 (150E ■) between 8-7401 and +1 and 2407 (33 $\mu$F oe) between junction 8-7401/3404 and ground.
  *Reason:* Improving the smoothing of the supply voltage.
- In week 252 the groove diameter of the small pulley of flywheel 79 was enlarged.
  *Reason:* Improving the take-up function (bigger torque).
- Approx 2000 decks of the D9-1 version have been provided with a new playback head, code number 4822 249 10195.
  At the same time the value of 2406 and 2410 has been adapted (1,2 nF); see also A82-340.
  These tape-decks can be recognized by change code AH02.
  *Reason:* Field test of new playback head.
- In week 321 (for D9-1) and week 322 (for D9-2), winding brackets 505 and 507 were changed.
  *Reason:* Avoiding that the keys become out of true.
- In week 323, LED 1701 in version D9-1 was changed in type LN28RPL (4822 130 32087).
  *Reason:* Delivery problems.
  Furthermore item no. 56 has been changed for Service in 4822 255 20096. Under this code number only the LED holder (item no. 56b in exploded view 27891E) is being supplied.
  *Reason:* Standardization.
- In week 325 frinction 38 was changed (with change code AH03 in D9-1 and AH01 in D9-2) in 4822 528 20381. Furthermore the PCB near the commutator was changed.
  *Reason:* Improving the functioning


BLUE
RED
WHITE
RED
WHITE
RED
SK-B
BLUE
RED
M
CONN. 1
SK/DK 6
+ RADIO 5
AF-L 4
AF-R 3
SUPPLY 2
⊥ 1
SK-C
SK-A
1701
a
k
orange
a
k
brown

28 422 D12/B

### FRICTION CLUTCH 88

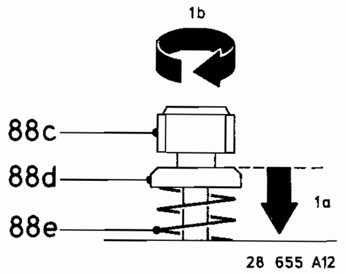


Fig. 1

### MOTOR 72

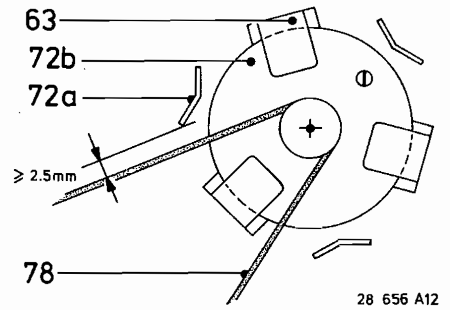


Fig. 2

### FLYWHEEL 79

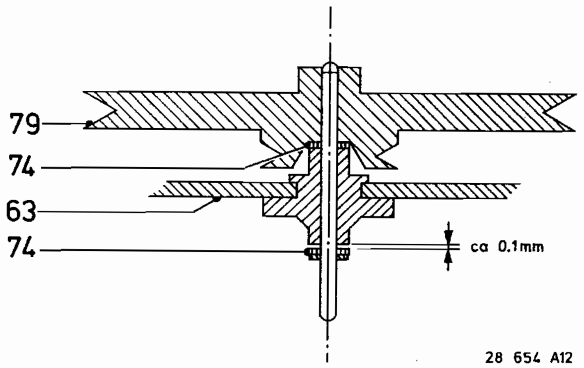


Fig. 3

### PRESSURE ROLLER 69

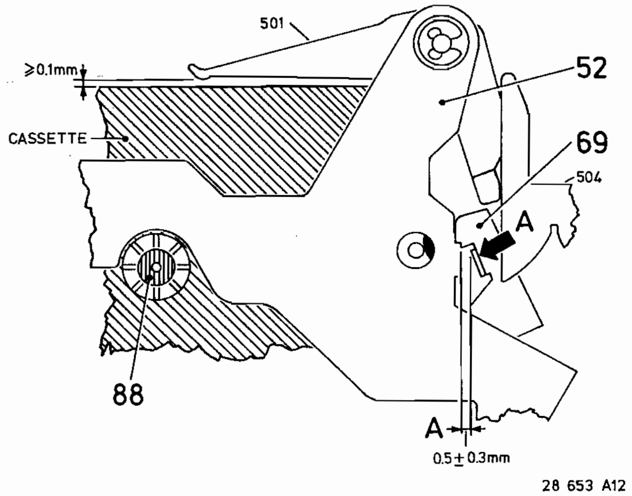


Fig. 4

## GB ADJUSTMENT

*Equipment required:*

- Universal test cassette SBC133 4822 397 30039
- AC millivoltmeter

**Azimuth**

Alignment should be carried out on a complete car radio.
Connect the millivoltmeter to the loudspeaker outputs.

- insert test cassette and play the 8 kHz signal.
- turn screw 55a for equal and maximum output voltage reading for both the LH and RH channel.
- lockpaint screw 55a.

**CHECKS**

*Equipment required:*

| | |
|---|---|
| — friction test cassette (811/CTM) | 4822 395 30054 |
| — universal test cassette SBC133 | 4822 397 30039 |
| — wow & flutter meter | |

**1. Friction clutch 88, Fig. 1**

- insert friction test cassette (811/CTM)
- play take-up torque should be between 45 and 60 g/cm

No winding or irregular winding of the tape in the cassette may be caused by:

a. too heavy friction in the cassette
b. insufficient winding friction
First turn catch 88c (Fig. 1). If this is insufficient, friction coupling 88 should be replaced.

**2. Wow & flutter/tape speed**

This check is carried out on a complete car radio

- connect the wow & flutter meter to the L.S. outputs
- insert cassette SBC133 and play the 3150 Hz signal
- the wow & flutter value should be ⩽ 0,35%
- tape speed should be 4,76 cm/sec (±2%)
- the speed is adjusted with R3417

In the event of an excessive wow and flutter value, the following parts should be checked as to correct functioning:

- motor
- pressure roller
- drive belts (in case of replacement, clean pulleys)
- friction clutch
- flywheel

**3. For the other adjustments see Fig. 2 through 4**

It is advisable to clean the playback head, the pressure roller and the capstan with alcohol periodically.

## NL INSTELLINGEN

*Benodigde meetinstrumenten:*

- universele testkassette SBC133 4822 397 30039
- AC millivoltmeter

**Azimuth**

Instelling dient te geschieden met de autoradio kompleet.

- sluit millivoltmeter aan op de luidsprekeruitgangen
- breng de testkassette in en geef het 8 kHz signaal weer
- stel met behulp van schroef 55a de uitgangsspanning zo in, dat deze voor zowel het linker-als het rechterkanaal gelijk en maximaal is.
- lak schroef 55a

**KONTROLES**

*Benodigde meetinstrumenten:*

| | |
|---|---|
| - friktie testkassette (811/CTM) | 4822 395 30054 |
| — universele testkassette SBC133 | 4822 397 30039 |
| — wow & flutter meter af | |

**1. Friktie 88, Fig. 1**

- breng de friktie-testkassette (811/CTM) in
- de afspeelfriktie moet 45-60 g/cm zijn

Niet of onregelmatig opwinden van de tape in de kassette kan veroorzaakt worden door:

a. Te veel wrijving in de kassette
b. Te geringe opspoelfriktie.
Eerst moet meenemer 88c verdraaid worden (Fig. 1). Is dit onvoldoende dan moet friktiekoppeling 88 vervangen worden.

**2. Wow & flutter/bandsnelheid**

De kontrole dient te geschieden met de autoradio kompleet:

- sluit wow & flutter meter aan op de LS-uitgangen
- breng de testkassette SBC133 in en geef het 3150 Hz signaal weer
- de jengelwaarde moet ⩽ 0,35% zijn
- de bandsnelheid moet zijn 4,76 cm/sec (±2%)
- de snelheid kan met R3417 worden ingesteld

Bij een buitensporige jengelwaarde dienen de volgende onderdelen op hun juiste werking te worden gekontroleerd:

- motor
- drukrol
- snaren (bij vervanging de poelies schoonmaken)
- friktiekoppeling
- vliegwiel

**3. Voor de overige instellingen zie de figuren 2 t/m 4**

Aangeraden wordt, om periodiek de W-kop, de drukrol en de toonas te reinigen met alcohol.

## F REGLAGES

*Instruments requis*

- cassette d'essai universelle SBC133 4822 397 30039
- millivoltmètre en alternatif

**L'azimuth**

Le réglage doit se faire lorsque l'auto-radio est au complet.

- brancher le millivoltmètre sur les sorties d'h.p.
- insérer la cassette d'essai et reproduire le signal de 8 kHz
- à l'aide de la vis 55a régler la tension de sortie de façon qu'elle soit égale et au maximum pour le canal de gauche tout comme celui de droite
- fixer la vis 55a à la laque.

**CONTRÔLES**

*Instruments de mesure requis:*

| | |
|---|---|
| — cassette de la friction (811/CTM) | 4822 395 30054 |
| — cassette d'essai universelle SBC133 | 4822 397 30039 |
| — instrument du pleurage et scintillement | |

**1. Friction 88, Fig. 1**

- introduire la cassette d'essai de friction (811/CTM)
- la force de friction doit se situer entre 45 et 60 g/cm

Le non-enroulement ou l'enroulement irrégulier de la bande dans la cassette peut être dû à:

a. Trop de frottement dans la cassette
b. Une friction insuffisante
Il faudra tourner la pièce d'entrainement 88c (Fig. 1). Si ceci est insuffisant il faudra remplacer couple de friction 88.

**2. Pleurage et scintillement/vitesse de défilement**

Le contrôle doit se faire lorsque l'auto-radio est au complet:

- brancher l'instrument du pleurage sur la sortie d'h.p.
- introduire la cassette d'essai SBC133 et reproduire le signal de 3150 Hz
- la valeur de pleurage doit être ⩽ 0,35%
- la vitesse de défilement doit être 4,76 sec. ±2%
- la vitesse est réglable avec R3417

Si le taux de pleurage s'écarte de la valeur type, il faudra vérifier le fonctionnement des composants suivants:

- moteur
- galet presseur
- courroie d'entrainement (en cas de remplacement, nettoyer les poulies)
- couple de friction
- volant

**3. Voir Fig. 2 à 4 pour ce qui est des autres réglages**

Il est conseillé de nettoyer régulièrement la tête reproduction, le galet presseur et le cabestan à l'alcool.

Service
Service
**Service**

# Information

1984-12-14

Auto cassette deck D9

A84-353

**Previously published: A82-340, A83-339**

**Changes introduced in the course of production**

- With code AH02 playback head 1401 has been changed to 4822 249 10195.
  Furthermore, the value of 2406 and 2416 has been changed to 1.5 nF.

  *Reason:* delivery problems.

- As of week 431 switch SK-A has been changed.

  *Reason:* to prevent the contact spring from scraping. The stock of Concern Service has been adapted.

- With code AH03437 (in D9-1 and D9-2), AH04437 (in D9-3) the material of belt 67 has been changed.

  *Reason:* prevention of static charging. The stock of Concern Service has been adapted.

Service
Service
Service

# Information

1986-08-22

Auto cassette deck D9

A86-328

**Previously published: A82-340, A83-339, A84-353**

**Changes introduced in the course of production**

- With code AH05 playback head 1401 has been changed to 4822 249 30093.
  Furhtermore, the value of 2406 and 2416 has been changed to 1.2 nF.

  *Reason:* better quality

# Service Information

1989-04-07

Car cassette deck D9

A89-305

**Product Service Group CE Audio**

Due to delivery problems item 66 (4822 403 51682) will be supplied without gearwheel 66a and ring 66b. Our existing stock will be exhausted.

Service
Service
Service